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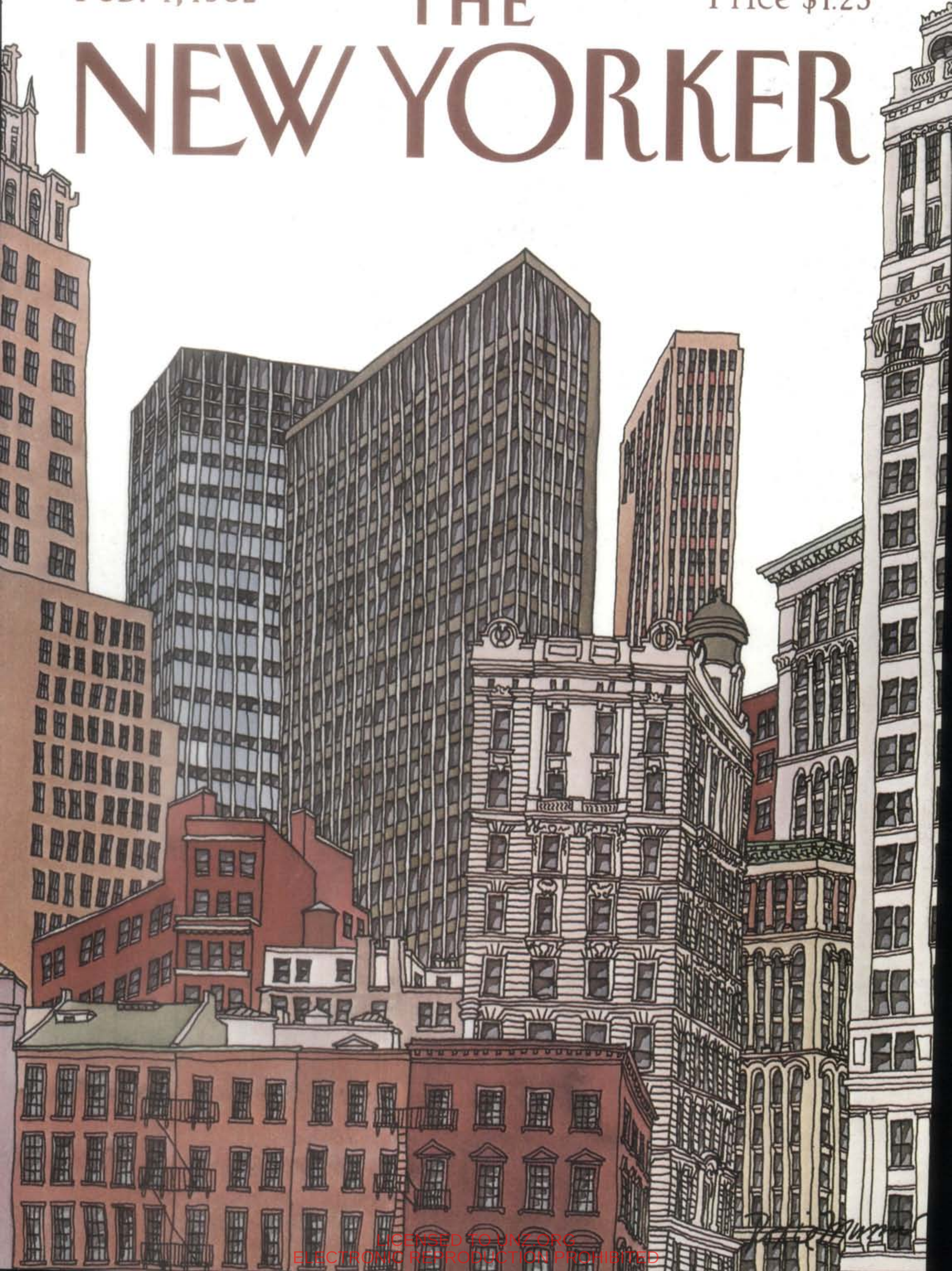

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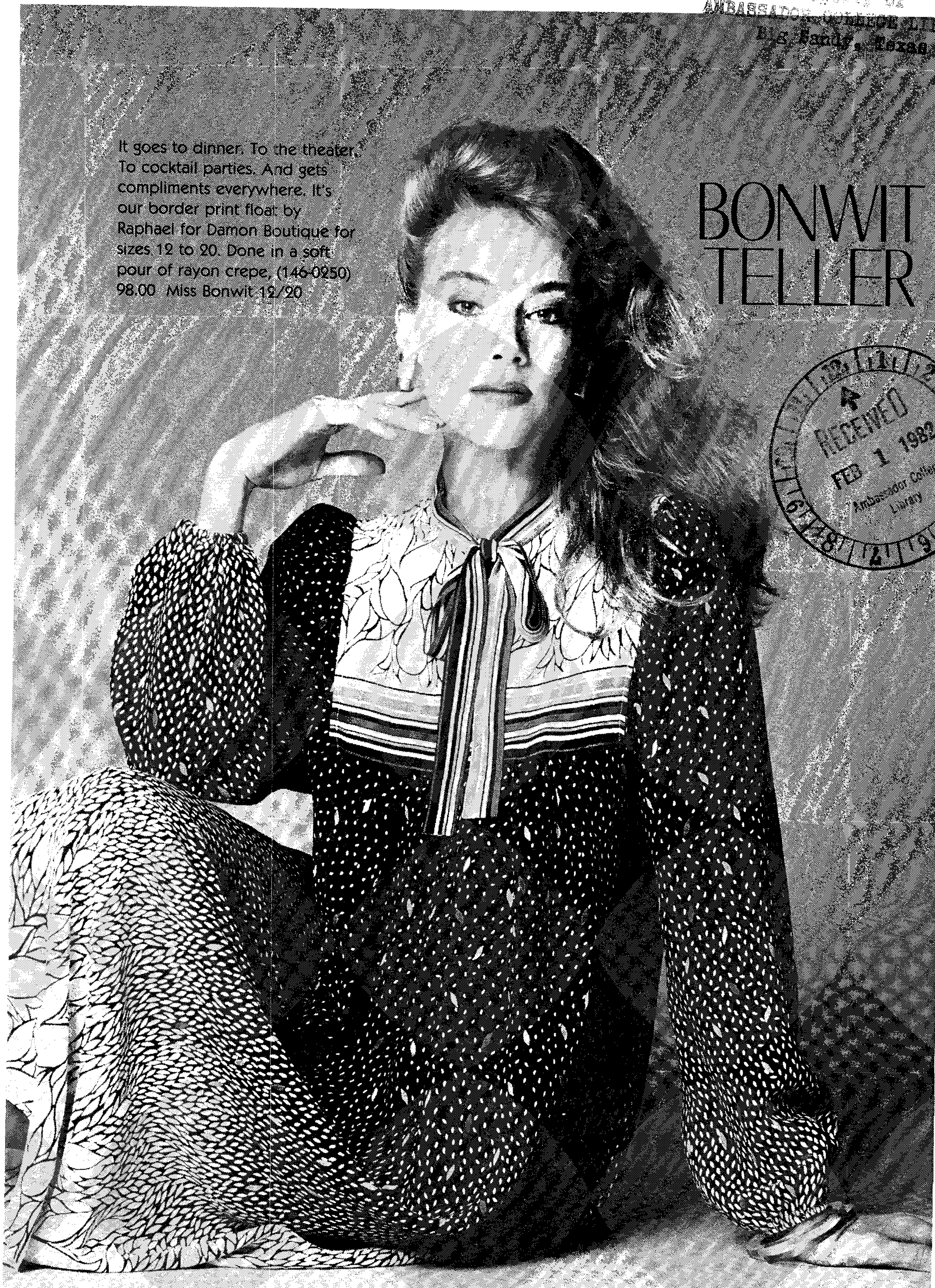
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GOINGS ON ABOUT TOWN

A CONSCIENTIOUS CALENDAR OF EVENTS OF INTEREST

THE THEATRE

PLAYS AND MUSICALS

Beside the Seaside—A play by Stephen Temperley. (Hudson Guild Theatre, 441 W. 26th St. 760-9810. Wednesday through Sunday at 8. Matinées Saturday and Sunday at 3. Closes Sunday, Jan. 31.)

The Brixton Recovery—A play by Jack Gilhooley. (South Street Theatre, 424 W. 42nd St. 279-4200. Wednesdays through Fridays at 8; Saturdays at 7 and 10; and Sundays at 7. Matinées Sundays at 3.)

Cloud 9—Caryl Churchill's comedy about the "confusion" of sexuality—first in a British outpost in Africa in 1880 and then in a park in London in 1980—is a witty and original work that adds a measure of confusion all its own. It is very well performed, under Tommy Tune's brilliant direction, by Nicolas Surovy, Veronica Castang, E. Katherine Kerr, Don Amendolia, Željko Ivanek, Concetta Tomei, and Jeffrey Jones, all of them in multiple roles (m. & f.). Effective sets by Lawrence Miller. (Reviewed in our issue of 6/1/81.) (Lucille Lortel Theatre, 121 Christopher St. 924-8782. Tuesdays through Fridays at 8; Saturdays at 7 and 10; and Sundays at 7. Matinées Sundays at 3.)

Confluence—Three frail, sporadically entertaining one-acters, by three generally robust dramatists: John Bishop's eponymous "Confluence;" "Am I Blue," by Beth Henley; and "Thymus Vulgaris," by Lanford Wilson. (Circle Repertory Company Theatre, 99 Seventh Ave. S., at Sheridan Sq. 924-7100. Nightly, except Mondays, at 8. Matinées Saturdays at 2 and Sundays at 3. Closes Sunday, Feb. 21.)

Cotton Patch Gospel—A musical entertainment by Tom Key (who is also the star and is joined onstage by four musicians) and Russell Treyz, based on Clarence Jordan's book "The Cotton Patch Version of Matthew and John." The music is by the late Harry Chapin. (Lambs Theatre, 130 W. 44th St. 997-1780. Tuesdays through Saturdays at 8. Matinées Wednesdays and Saturdays at 2, and Sundays at 3.)

Crimes of the Heart—The events that befall an unhappy family in a small town in Mississippi give a brilliant young playwright, Beth Henley, a chance to write a succession of highly comic scenes, wonderfully well acted. (11/16/81) (Golden, 252 W. 45th St. 246-6740. Tuesdays through Saturdays at 8. Matinées Wednesdays and Saturdays at 2, and Sundays at 3.)

The Curse of an Aching Heart—William Alfred conducts a brief and sometimes humorous examination of the Irish-American lower-middle-class depths. The time is the twenties, the place Brooklyn. Faye Dunaway makes a splendid heroine. (Reviewed in this issue.) (Little Theatre, 240 W. 44th St. 944-9450. Tuesdays through Saturdays at 8. Matinées Wednesdays and Saturdays at 2, and Sundays at 3.)

Dreamgirls—The slickest possible production of a musical comedy whose book, music, and lyrics are almost totally lacking in character. If Michael Bennett, the director, had been a Union general, the Civil War would have lasted about twenty minutes. (1/4/82) (Imperial, 249 W. 45th St. 265-4311. Nightly, except Sundays, at 8. Matinées Wednesdays and Saturdays at 2.)

The Dresser—An oddly Dickensian play, which might well have formed a part of "Nicholas Nickleby." Tom Courtenay and Paul Rogers take the leading roles, and what actors they are! The author is Ronald Harwood. (11/16/81) (Brooks Atkinson, 256 W. 47th St. 245-3430. Nightly, except Sundays, at 8. Matinées Wednesdays and Saturdays at 2.)

Entertaining Mr. Sloane—A satisfying revival of Joe Orton's astonishing, funny comedy about a handsome young criminal who becomes the sex object of his middle-aged landlady and her homosexual brother. With Brad Davis, Barbara Bryne, Gwyllum Evans, and Jerome Dempsey. John Tillinger is the director. (7/6/81) (Cherry Lane, 38 Commerce St. 989-2020. Wednesday through Friday at 8; Saturday at 7 and 10:15; and Sunday at 7:30. Matinée Sunday at 3. Closes Sunday, Jan. 31.)

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31	1	2	3	4	5	6

Equity Library Theatre—A revival of the 1947 musical **Street Scene**, with music by Kurt Weill, lyrics by Langston Hughes, and a book by Elmer Rice based on his own play of the same title. The fourth in this season's series of eight productions. (Equity Library Theatre, 103rd St. and Riverside Dr. Nightly at 8. Matinées Saturday and Sunday at 2:30. Closes Sunday, Jan. 31. For information about tickets, for which contributions are requested, call 663-2028.)

Grown Ups—Jules Feiffer's awkwardly constructed play about the hell of Jewish middle-class life in New York. The cast, headed by Bob Dishy, is superlative. (12/21/81) (Lyceum, 149 W. 45th St. 582-3897. Nightly, except Sundays, at 8. Matinées Wednesdays and Saturdays at 2.)

The House Across the Street—A play by Darrah Cloud. Preview Wednesday, Jan. 27. Opens officially on Thursday, Jan. 28, and will ru through Sunday, Feb. 14. (Ensemble Studi Theatre, 549 W. 52nd St. 247-4982. Wednes days through Sundays at 7:30. Matinées Sat urdays and Sundays at 2:30.)

Joseph and the Amazing Technicolor Dreamcoa—Bill Hutton heads the cast of a revival of musical derived from the Old Testamen story. Andrew Lloyd Webber composed th score and Tim Rice wrote the lyrics. Ton Tanner is the director. (Royale, 242 W. 45t St. 245-5760. Wednesdays through Satur days at 8, and Sundays at 5:30. Matinée Wednesdays, Saturdays, and Sundays at 2.)

Keyboard—A play by Matt Robinson, wit Cleavon Little as a rhythm-and-blues singe trying to make a comeback. (Henry Stree Settlement's New Federal Theatre, 466 Gran St. 598-0400. Thursday through Saturday a 7:30. Matinée Sunday at 3. Closes Sunda Jan. 31.)

Key Exchange—A charming first play by Kevi Wade, with Ben Masters and Priscilla Lope as a pair of lovers and Mark Blum as a youn bridegroom, all of whom meet on their bicy cles in Central Park on Sunday afternoon The performances, under Barnet Kellman' direction, are all that any dramatist—new o old—could hope for. (6/22/81) (Orpheum 126 Second Ave., at 8th St. 260-8480. Tues days through Fridays at 8; Saturdays at and 10; and Sundays at 7:30. Matinées Sun days at 3.)

Lena Horne: The Lady and Her Music—Singin better than she has ever sung before, Mis Horne gives one of the most sensational per formances in recent years. (5/25/81) (Neder

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COVER: *Roxie Munro*

DRAWINGS: *Eldon Dedini, Roz Chast, Edward Koren, Charles Barsotti, Donald Reilly, James Mulligan, George Booth, Bill Woodman, William Steig, Arnie Levin, James Stevenson, Barney Tobey, Mischa Richter, Robert Mankoff, Roz Zanengo, Stan Hunt*

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GOINGS ON ABOUT TOWN

lander, 208 W. 41st St. 921-8000. Tuesdays through Saturdays at 8. Matinées Sundays at 3.)

Light Opera of Manhattan—Through Sunday, Feb. 7: Gilbert and Sullivan's **THE MIKADO.** (Eastside, 334 E. 74th St. 861-2288. Wednesdays through Saturdays at 8:30. Matinées Wednesdays at 2 and Saturdays and Sundays at 4.)

Little Me—A totally unnecessary revival, in somewhat altered form, of a twenty-year-old musical with a book by Neil Simon, music by Cy Coleman, and lyrics by Carolyn Leigh. That excellent comic actor James Coco goes largely to waste in it. (Reviewed in this issue.) (Eugene O'Neill, 230 W. 49th St. 246-0220. Nightly, except Sundays, at 8. Matinées Wednesdays and Saturdays at 2.)

Macbeth—Andrea Weber and Nicol Williamson star in Shakespeare's tragedy. Directed by Mr. Williamson. Previews Wednesday, Jan. 27. Opens officially on Thursday, Jan. 28, and will run through Sunday, April 4. (Circle in the Square, Broadway at 50th St. 581-0720. Tuesdays through Saturdays at 8; opening-night curtain at 7. Matinées Wednesdays and Saturdays at 2, and Sundays at 3.)

March of the Falsettos—William Finn's clever, talented musical (barely over an hour long) about a man who leaves his wife and young son for a male lover. The performance, under the ingenious direction of James Lapine, is light and lively. (5/18/81) (Westside Arts Theatre, 407 W. 43rd St. 541-8394. Wednesday through Friday at 8:30; Saturday at 7 and 10; and Sunday at 7. Matinée Sunday at 3. Closes Sunday, Jan. 31.)

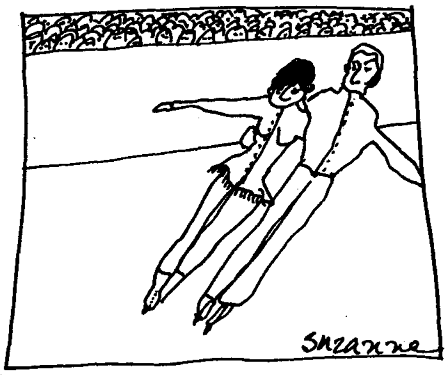
Mass Appeal—A worldly, self-satisfied, middle-aged priest and an idealistic young seminarian seek to find common ground, not altogether in vain. Milo O'Shea and Michael O'Keefe make up the small cast, and they suffice. (11/23/81) (Booth, 222 W. 45th St. 246-5969. Tuesdays through Saturdays at 8. Matinées Wednesdays and Saturdays at 2, and Sundays at 3.)

Miss Julie and **Playing with Fire**—A Strindberg double bill. (Roundabout Stage Two, 307 W. 26th St. 242-7800. Tuesdays through Saturdays at 8. Matinées Wednesdays, Saturdays, and Sundays at 2.)

Negro Ensemble Company—Charles Fuller's gripping drama **A SOLDIER'S PLAY** is about an investigation into the shooting of a black sergeant at an Army camp in Louisiana in 1944. In a series of flashbacks, the investigator (a black Army captain) and the audience move closer and closer to the truth about the murder and about a number of other matters as well. The performances by all members of the company are excellent, under Douglas Turner Ward's direction. Adolph Caesar is the sergeant, Charles Brown is the captain, and Larry Riley is a private whose easygoing manner is especially irksome to the sergeant. (12/7/81) (Theatre Four, 424 W. 55th St. 246-8545. Tuesdays through Fridays at 8; Saturdays at 8:30; and Sundays at 7. Matinées Saturdays at 3 and Sundays at 2:30. Closes Sunday, Feb. 14.)

Othello—James Earl Jones and Christopher Plummer in Shakespeare's tragedy. Previews Friday through Tuesday, Jan. 29-Feb. 2. Opens officially on Wednesday, Feb. 3, and will run through Sunday, March 7. (Winter Garden, Broadway at 50th St. 245-4878. Tuesdays through Saturdays at 8; opening-night curtain at 6:15. Matinées Wednesdays, Saturdays, and Thursday, Feb. 4, at 2, and Sundays at 3.)

Sister Mary Ignatius Explains It All for You and **The Actor's Nightmare**—A very funny evening in the theatre. "Sister Ignatius," the second of Christopher Durang's brace of one-acters, is a scathing satire on Catholic education: a crazy nun verbally molests her small pupils until she is given her comeuppance by four visiting alumni. In the curtain-raiser, "The Actor's Nightmare," a businessman dreams that he is on a stage and forced to perform, giving rise to a cluster of shrewd and wicked parodies of respected playwrights. Everyone in the company does very well, under Jerry Zaks's nimble direction; Elizabeth Franz is splendid as the nun, and Jeff Brooks is fine as the actor in spite of himself. (11/2/81) (Playwrights Horizons, 416 W. 42nd St. 279-4200. Tuesdays through Fridays at 8; Saturdays at 7 and 10; and Sundays at 7. Matinées Sundays at 3.)



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The Stronger and **Hughie**—A Strindberg-O'Neill double bill. (Harold Clurman, 412 W. 42nd St. 279-4200. Wednesday through Saturday at 8. Matinées Saturday and Sunday at 3. Closes Sunday, Jan. 31.)

Tomfoolery—A musical entertainment adapted from the music and lyrics of Tom Lehrer by Cameron MacKintosh and Robin Ray. With MacIntyre Dixon, Joy Franz, Jonathan Hadary, and Donald Corren. Directed by Gary Pearle and Mary Kyte. (Top of the Gate, 160 Bleecker St. 982-9292. Tuesdays through Fridays at 8; Saturdays at 7 and 10; and Sundays at 7:30. Matinées Sundays at 3.)

Torch Song Trilogy—Three plays—humorous, sad, sentimental, and witty—by and starring Harvey Fierstein, as a Jewish homosexual hustler and drag queen. His performance is stylish and very good, and he is ably supported by, among others, Estelle Getty, as his mother on a visit from Miami, and Matthew Broderick, as a street kid he is trying to adopt. The four-and-a-half-hour running time goes by quickly. (Reviewed in this issue.) (Actors Playhouse, 100 Seventh Ave. S., at Sheridan Sq. 691-6226. Nightly, except Tuesdays, at 7:30.)

Twelve Dreams—A fantasy, by James Lapine, based on a case history of Jung's, about a little girl's self-destroying nightmares. The Jungian appurtenances are trying, but the production, under Mr. L.'s direction, is rich and imaginative. The beautiful score was composed by Allen Shawn. With James Olson, Carole Shelley, Marcell Rosenblatt, Stefan Schnabel, Valerie Mahaffey, Thomas Hulce, and Olivia Laurel Mates (as the dreamer). All are good. (1/4/82) (Public, 425 Lafayette St. 598-7150. Nightly at 8. Matinées Saturday and Sunday at 3. Closes Sunday, Jan. 31.)

The Unseen Hand and **Killer's Head**—A revival of two one-acters by Sam Shepard. Opens Wednesday, Jan. 27. (Provincetown, 133 Macdougal St. 777-2571. Tuesdays through Fridays at 8; Saturdays at 7 and 10; and Sundays at 7. Matinées Sundays at 3.)

Waltz of the Stork—A so-called "comedy with music," written, directed, and acted by Melvin Van Peebles, whose talent, energy, and attractiveness are everywhere apparent but who has plainly undertaken more than any one man should. (1/11/82) (Century, 235 W. 46th St. 354-6644. Tuesdays through Saturdays at 8. Matinées Wednesdays and Saturdays at 2:30, and Sundays at 3.)

The West Side Waltz—Katharine Hepburn, Dorothy Loudon, and Regina Baff fill this rather thin little comedy with a brisk and sometimes touching liveliness. The author is Ernest Thompson, who wrote "On Golden Pond." (11/30/81) (Ethel Barrymore, 243 W. 47th St. 246-0390. Nightly, except Sundays, at 8. Matinées Wednesdays and Sa
days at 2.)

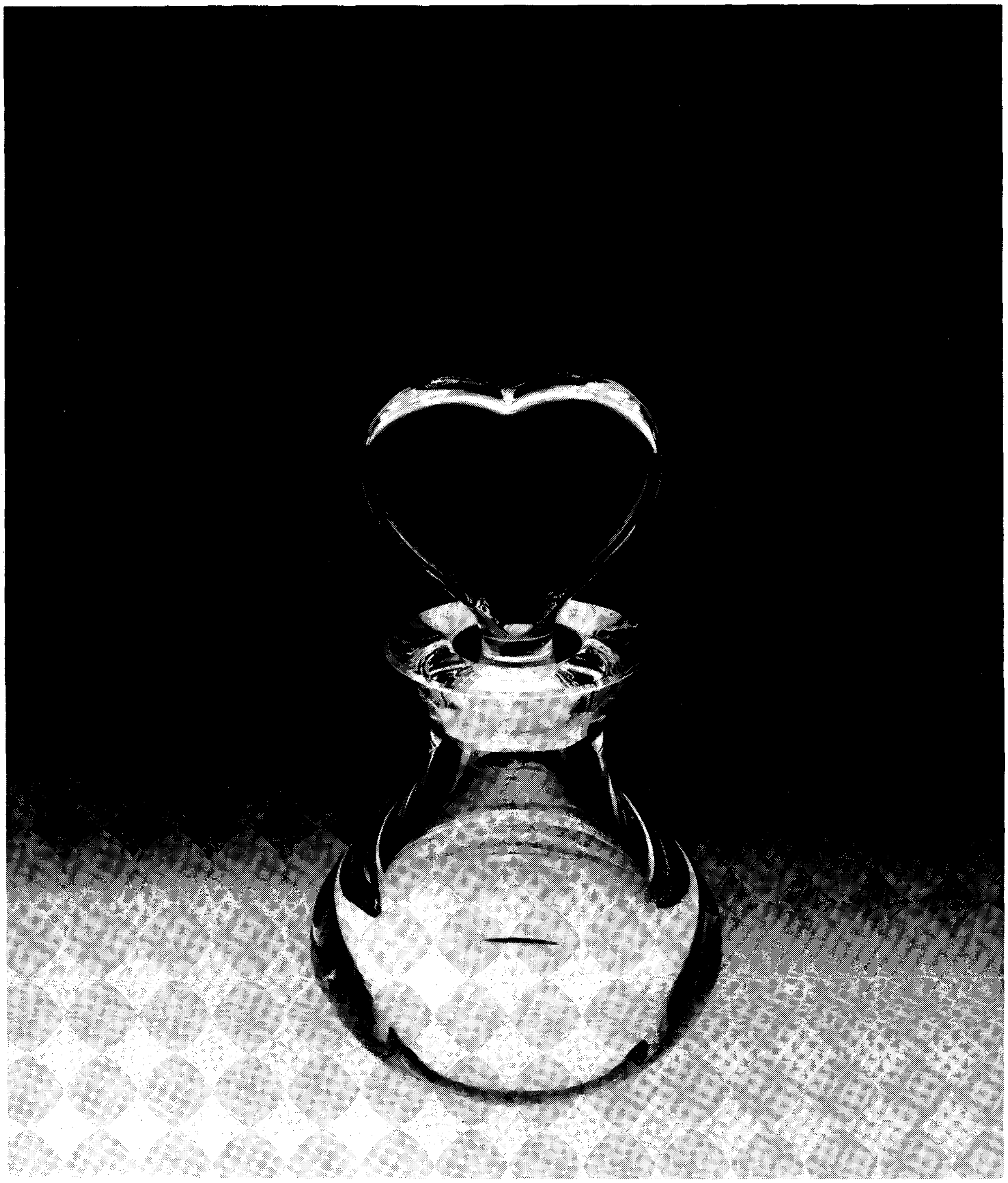
When We Dead Awaken—A decent productio
Ibsen's final play, which perhaps requir
little more than that. With Kim Hunter
Anne Twomey at the head of the c
(Reviewed in this issue.) (Open Space,
Second Ave., at 8th St. 254-8630. Thursc
through Saturdays at 8. Matinées Sunday
3. Closes Sunday, Feb. 7.)

The World of Sholom Aleichem—A reviva
Arnold Perl's dramatization of three sto
by Sholom Aleichem and I. L. Peretz. J
Gilford, who appeared in the original 1
production, stars. Previews through Wed
day, Feb. 3. Opens officially on Thursc
Feb. 4. (Rialto, Broadway at 43rd St.
5236. Wednesdays through Saturdays a
and Sundays at 7:30. Matinées Wednesc
and Saturdays at 2, and Sundays at 3.)

Zastrozzi—The great Czech actor Jan Trish
a murky drama. (Reviewed in this iss
(Public, 425 Lafayette St. 598-7150. Ni
ly, except Mondays, at 8. Matinées Saturc
and Sundays at 3.)

Long Runs—**AIN'T MISBEHAVIN':** A well-nigh per
show based on the performing career of
Waller. (Belasco, 111 W. 44th St. 354-4
Nightly, except Thursdays and Sundays, a
Matinées Wednesdays and Sundays at 3,
Saturdays at 2.) . . . **AMADEUS:** A highly ir
ligent Peter Shaffer thriller having to do
one level, with the possibility that Moza
early death was a result of his having
poisoned by a rival and, on another le
with that rival's indignant repudiatior
God. John Wood plays the villainous puta
murderer, Antonio Salieri; Peter Firth p
the hapless Mozart; and Amy Irving p
his pretty, perky wife. (Broadhurst, 235
44th St. 247-0472. Tuesdays through Sa
days at 8. Matinées Wednesdays and Sa
days at 2, and Sundays at 3.) . . . **ANNIE:** A
musical derived from the celebrated cor
strip characters Little Orphan Annie
Daddy Warbucks. With Marcia Lewis a
alcoholic scold. (Uris, 51st St. west of Brc
way. 586-6510. Wednesdays through Sa
days at 8, and Sundays at 6:45. Matir
Wednesdays, Saturdays, and Sundays at
. . . **BARNUM:** David Mitchell's circus set
knockout, but this little musical has notl
to do with Barnum. Some other time,
haps, the great man will be allowed his
Mike Burstyn has the role of the impresa
(St. James, 246 W. 44th St. 398-0280. T
days through Saturdays at 8. Matir
Wednesdays and Saturdays at 2, and
days at 3.) . . . **THE BEST LITTLE WHOREHOUS**
TEXAS: A cheerful, cheering, and foolish
sical about a bordello called the Chic
Ranch. Tommy Tune was the choreograp
Carol Hall wrote the score, and Larry L. K
and Peter Masterson wrote the libretto. (4
Street Theatre, 226 W. 46th St. 246-0
Nightly, except Sundays, at 8. Matir
Wednesdays and Saturdays at 2.) . . . **CHIL**
OF A LESSER GOD: An excellent play about a
tally deaf young woman and a hearing yo
man who attempts to teach her the ar
speech. With Phyllis Frelich and Peter Ev
Mark Medoff is the author. (Longacre,
W. 48th St. 246-5639. Tuesdays through
urdays at 8. Matinées Wednesdays and
urdays at 2, and Sundays at 3.) . . . **A CHC**
LINE: A group of young dancers audition f
handful of chorus jobs in a show not ye
rehearsal, and by the time the evening is
we know everything about all of th
(Shubert, 225 W. 44th St. 246-5990. Tuesd
through Saturdays at 8. Matinées Wednesd
and Saturdays at 2.) . . . **DANCIN':** Superb yo
dancers (who can also sing) carry out the
ty and sexy notions of the great show-
choreographer Bob Fosse. (Ambassador,
W. 49th St. 541-6490. Tuesdays through
urdays at 8. Matinées Wednesdays and
urdays at 2, and Sundays at 3.) . . . **DEATHT**
A thriller almost as clever as "Sleuth."
author is Ira Levin, and the star is Fa
Granger. (Biltmore, 261 W. 47th St. 5
5340. Tuesdays through Saturdays at 8. M
inées Wednesdays and Saturdays at 2,
Sundays at 3.) . . . **EVITA:** A sentimental
sical about the life and death of Eva Pe
An excellent cast and a stylish product
but Eva remains a very peculiar choice f
heroine. (Broadway Theatre, Broadway

THE SHAPE OF SPRINGS TO COME.



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GOINGS ON ABOUT TOWN

53rd St. 247-3600. Nightly, except Sundays, at 8. Matinées Wednesdays and Saturdays at 2.) . . . **THE FANTASTICKS:** 9,048 performances so far. (Sullivan Street Playhouse, 181 Sullivan St., at Bleecker St. 674-3838. Tuesdays through Fridays at 8; Saturdays at 7 and 10; and Sundays at 7:30. Matinées Sundays at 3.) . . . **42ND STREET:** Once upon a time there was a silly-wonderful Warner Brothers musical about a young hoofer who goes on in place of a disabled star and herself becomes a star overnight. The legitimate musical that has been fashioned from the movie musical is just as silly but by no means as wonderful. With Jerry Orbach, Tammy Grimes, and Wanda Richert. (Majestic, 245 W. 44th St. 246-0730. Nightly, except Sundays, at 8. Matinées Wednesdays and Saturdays at 2.) . . . **OH! CALCUTTA!:** A collection of short sketches that purport to give us a refreshing view of sex and do not. (Edison, 240 W. 47th St. 757-7164. Mondays through Wednesdays, and Fridays, at 8; Saturdays at 7 and 9:30; and Sundays at 7. Matinées Sundays at 3.) . . . ***ONE MO' TIME:*** *A sunny salute to the good old days* of black vaudeville, in good old N'Orleans. Vernel Bagneris is the clever inventor of this oddity. Dick Vance plays trumpet in the accompanying jazz band. (Village Gate, 160 Bleecker St. 473-7270. Tuesdays through Fridays at 8; Saturdays at 7 and 10; and Sundays at 7:30. Matinées Sundays at 3.) . . . **THE PIRATES OF PENZANCE:** Treat Williams, Patrick Cassidy, Kaye Ballard, George S. Irving, David Garrison, and Maureen McGovern in a lively takeoff of the everlasting original. The director, Wilford Leach, has spruced up—some would say "roughed up"—Gilbert and Sullivan, making them more coarsely clownish than they would have wished to be. (Minskoff, 45th St. west of Broadway. 869-0550. Tuesdays through Saturdays at 8. Matinées Wednesdays and Saturdays at 2, and Sundays at 3.) . . . **SOPHISTICATED LADIES:** Maurice Hines and half a dozen fellow-dancers and singers make their way at breakneck speed through some thirty-five Duke Ellington numbers. A very slick production, though the great Duke himself seems oddly absent from his own party. (Lunt-Fontanne, 205 W. 46th St. 586-5555. Tuesdays through Saturdays at 8. Matinées Wednesdays and Saturdays at 2, and Sundays at 3.) . . . **SUGAR BABIES:** Mickey Rooney and Ann Miller pay tribute to what they pretend were the great days of burlesque. A marvellous show, with old-fashioned chorus girls and with beautiful costumes and settings by Raoul Pène du Bois. (Mark Hellinger, 237 W. 51st St. 757-7064. Nightly, except Sundays, at 8. Matinées Wednesdays and Saturdays at 2.) . . . **WOMAN OF THE YEAR:** A musical designed from start to finish to show off the multifarious talents of Lauren Bacall, who for energy and reliability is right up there with the tides in the Bay of Fundy. The music and lyrics are by Kander and Ebb, and the direction is by Robert Moore. (Palace, Broadway at 47th St. 757-2626. Tuesdays through Saturdays at 8. Matinées Wednesdays and Saturdays at 2, and Sundays at 3.)

MISCELLANY

ICE SHOW—"Ice Capades," with a company headed by Dorothy Hamill and Charlie Tickner. Opens Wednesday, Jan. 27, and will run through Sunday, Feb. 7. (Madison Square Garden, Seventh Ave. between 31st and 33rd Sts. 564-4400. Tuesdays, Thursdays, and Fridays at 7:30; Wednesdays at 2 and 7:30; Saturdays at 11, 3, and 8:30; and Sundays at 1:30 and 5:30. Extra performance Friday, Feb. 5, at 2.)

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DANCE

NEW YORK CITY BALLET—Wednesday evening, Jan. 27: "Bournonville Divertissements," "Piano Pieces," and "Stravinsky Violin Concerto." . . . ¶ Thursday evening, Jan. 28: "Agon," "Irish Fantasy," and "Chaconne." . . . ¶ Friday evening, Jan. 29: "Capriccio Italien," "Agon," and "Dances at a Gathering." . . . ¶ Saturday evening, Jan. 30: "Irish Fantasy," "Mozartiana," and "Dances at a Gathering." . . . ¶ Sunday matinée, Jan. 31: "Bournonville Divertissements," "Afternoon of a Faun," "Pas de Deux," and "Chaconne." . . . ¶ Sunday evening, Jan. 31: "Le Tombeau de Couperin," "The Magic Flute," and "Agon." . . . ¶ Tuesday evening, Feb. 2: "Square Dance," "The Cage," "Hungarian Gypsy Airs," and "Symphony in C." . . . ¶ Wednesday evening, Feb. 3: "Dances at a Gathering" and "Union Jack." . . . ¶ Thursday evening, Feb. 4: "La Source," an unnamed ballet (première), and "Bournonville Divertissements." . . . ¶ Friday evening, Feb. 5: "Square Dance," "Davidsbündlertänze," and "Symphony in C." . . . ¶ Saturday matinée, Feb. 6: "Le Tombeau de Couperin," "Agon," and "Union Jack." . . . ¶ Saturday evening, Feb. 6: The new ballet, "Davidsbündlertänze," and "Bournonville Divertissements." (New York State Theatre, Lincoln Center. 870-5570. Tuesdays through Saturdays at 8, and Sundays at 7. Matinées Sundays at 1, and Saturday, Feb. 6, at 2. Through Sunday, Feb. 21.)

DANCE THEATRE OF HARLEM—Wednesday evening, Jan. 27; Saturday evening, Jan. 30; and Sunday matinée, Jan. 31: "Allegro Brillante," "Doina," "Paquita," and "Frankie and Johnny." . . . ¶ Thursday and Friday evenings, Jan. 28-29, and Saturday matinée, Jan. 30: "Fête Noire," "The Four Temperaments," and "Firebird." . . . ¶ Sunday evening, Jan. 31: "Belé," "A Streetcar Named Desire," and "Firebird." . . . ¶ Tuesday and Wednesday evenings, Feb. 2-3, and Saturday evening, Feb. 6: "Concerto Barocco," "Songs of the Auvergne," "Banda," and "Mirage." . . . ¶ Thursday and Friday evenings, Feb. 4-5, and Saturday matinée, Feb. 6: "Paquita," "A Streetcar Named Desire," and "Troy Game." (City Center, 131 W. 55th St. 246-8989. Tuesdays through Saturdays at 8, and Sundays at 7:30. Matinées at 2. Through Sunday, Feb. 14.)

ANDREW DEGROAT AND DANCERS—"Thin Ice" (New York première), and two premières—"George's Destinies" and "Brussels 1933." (Marymount Manhattan Theatre, 221 E. 71st St. Friday and Saturday, Jan. 29-30, at 9, and Sunday Jan. 31, at 3. For information about tickets, call 924-2692.)

NIGHT LIFE

(A highly arbitrary listing, in which bold-face type is used to pick out a few of the more notable performers in town. . . . ¶ Musicians and night-club proprietors live complicated lives that are subject to last-minute change; it is therefore always advisable to call ahead.)

ANGRY SQUIRE, 216 Seventh Ave., at 23rd St. (242-9066)—A convivial Chelsea bar and restaurant gussied up as a nautical pub. The four-foot-high bandstand is more likely to induce acrophobia than seasickness. Friday and Saturday, Jan. 29-30, Adele Foster leads her trio; on Friday and Saturday, Feb. 5-6, pianist **KENNY BARRON'S** trio will take over the bandstand. Sets at ten, eleven-thirty, and one.

BLUE NOTE, 131 W. 3rd St., near Sixth Ave. (475-8592)—The School of New York Night-Club Décor, which favors industrial carpeting, stainless steel, and lots of mirrors, mirror tiles, and mirror panels, flourishes in this new room. The back wall is graced with a four-color neon sign depicting a bridge (perhaps the Brooklyn) in red, the downtown skyline in blue, two stars in white, and a crescent moon in yellow. Hard-boppers **CLIFFORD JORDAN** and **BARRY HARRIS** co-pilot their quintet through Sunday, Jan. 31; on Tuesday, Feb. 2, pianist **RED GARLAND** will arrive with his trio. There are usually three sets, beginning at ten. Dining.

BOTTOM LINE, 15 W. 4th St., at Mercer St. (228-6300)—Unchallenged in its sensible, efficient seating (there are tables and chairs for four hundred) and its liberal musical tastes, and, what's more, the shows usually begin on time. Wednesday, Jan. 27, folkie **ARLO GUTHRIE;** Thursday, Jan. 28, Crystal Ship; Friday and Saturday, Jan. 29-30, a doo-wop evening featuring the Teenagers, the Paragons, the Charts, and Fourteen Karat Soul; and Thursday through Saturday, Feb. 4-6, **GIL SCOTT-HERON,** the protest poet and R. & B. singer. Shows Sundays through Thursdays at eight-thirty and eleven-thirty, and Fridays and Saturdays at nine and midnight. Dining.

BRADLEY'S, 70 University Pl., at 11th St. (228-6440)—Still panelled with dark-stained pine, highlighted with Photo-Realist portraits, and inhabited by professional conversationalists, who often take a break and listen to the worthwhile live music, after all these years. Pianist **HAROLD MABERN** works with bassist **JAMIL NASSER** through Saturday, Jan. 30. Music from nine-forty-five. Dining.

BROADWAY JOE'S, 315 W. 46th St., near Eighth Ave. (246-6513)—The urbanely swinging **JIMMY LYON,** who plays piano until ten in Peacock Alley at the Waldorf, a large, *very* subdued room, comes to this convivial, buzzing smallish barroom, where he gets an impressive second wind. He's here from ten-thirty to two Wednesdays through Sundays. Dining.

CACHAÇA, 403 E. 62nd St. (688-8501)—Thousands of miles from Corcovado, Sugarloaf Mountain, Guanabara Bay, Ipanema and Copacabana beaches, and the more than four million resident Cariocas is this second-floor Rio-inspired club. A trio and a vocalist perform the bossa nova and other sambas from eleven. Before and between sets, there is recorded American and Brazilian disco music and Carnaval music. The club is open nightly, except Mondays, from eight to four. Dining and dancing.

CAFÉ PIERRE, in the Pierre Hotel, Fifth Ave. at 61st St. (838-8000)—**BUCKY PIZZARELLI,** who occasionally lets loose on hot-chord solos on his resonant seven-string (the seventh string is a bass string) guitar, guides a trio Tuesdays through Saturdays from nine to one. Dining and dancing.

CARLYLE HOTEL, Madison Ave. at 76th St. (744-1600)—In the Café Carlyle, **JONAH JONES** is playing trumpet and leading his quartet Tuesdays through Saturdays at ten and midnight. Dining. . . . **BARBARA CARROLL,** a singer and pianist who sometimes gets a look of wild delight on her face while she's at her nimble work, can be heard from nine-thirty every night but Sunday in the Bemelmans Bar.

CARNEGIE TAVERN, 165 W. 56th St. (757-9522)—A restaurant situated in back of Carnegie Hall, with dark-brown walls and carpeting and a glassed-in sidewalk section. **ELLIS LARKINS,** a diffident performer and a delicate, elegant pianist, does a whole gang of abbreviated sets between eight and midnight nightly except Sundays.

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(982-4052)—The Bowery Institute of Rock and Roll. The current schedule of visiting performers: Wednesday, Jan. 27, Shmoozebusters, the Ripp, Hunger Project, and Dan Yodie; Thursday, Jan. 28, China Shop, Retreat or Fall, and AE; Friday, Jan. 29, Shrapnel, Boys Life, and Justin Trouble; and Saturday, Jan. 30, the Revelons and Breakfast Club. Music nightly, usually long after nine-thirty. Monday is showcase night.

City Limits, 125 Seventh Ave. S., at 10th St. (243-2242)—When the stars at night are big and bright, you can wear your cowboy boots; when it's raining, you can wear your cowboy galoshes. Various lively, well-miked country-and-Western bands are booked to play here for listening and dancing nightly after ten.

Cookery, 21 University Pl., at 8th St. (674-4450)—**ALBERTA HUNTER** demonstrates the art of the blues innuendo with her trio through Saturday, Jan. 30. On Tuesday, Feb. 2, **MICHAEL MORIARTY,** actor, singer, songwriter, will begin performing with bassist **JAY LEONHART** and pianist **DAVID LAHM.** The Sunday-and-Monday slot is filled by composer, singer, and pianist **ARTHUR SIEGEL,** who presents show tunes, mostly in medleys, and introduces them with thorough, witty dossiers on their history. His performing style isn't self-indulgent or overbearing, and his arrangements are simple, unadorned, and straightforward—in short, perfect. Shows at nine and eleven. Dining.

Eagle Tavern, 355 W. 14th St., at Ninth Ave. (924-0275)—Bluegrass, string-band, and Irish, British, and American folk music made by visiting players from New England, the Eastern seaboard, and Appalachia is the fare, along with pitchers of beer. The schedule: Wednesday, Jan. 27, Bill Ochs; Thursday, Jan. 28, Alan Feldman, with Ken Kosek and Scott Ainslie; Saturday, Jan. 30, Major Contay & the Canebrake Rattlers; Sunday, Jan. 31, guitarists Peter Spencer and Marty Brennan; Wednesday, Feb. 3, Charlie O'Hegerty; Thursday, Feb. 4, Stivers & Becker; and Saturday, Feb. 6, Tony Trischka & Skyline. Music Wednesdays at eight-thirty, Thursdays and Saturdays at eight-fifteen, and Sundays at nine.

Eddie Condon's, 144 W. 54th St. (265-8277)—One of the two homes for traditional small-band jazz on the block (see also Jimmy Ryan's below). The house band works out Mondays through Fridays from eight-thirty to two, and Saturdays from nine-thirty to three. Wednesdays and Fridays, other combos play from six to eight-thirty. On Sunday, Jan. 31, Bill Kirchner's nonet will perform from about nine-thirty. Dining.

Fat Tuesday's, 190 Third Ave., at 17th St. (533-7902)—A fancy, carpeted, often very crowded, low-ceilinged, belowstairs, mostly mainstream-jazz room. **JOE PASS,** the stunning jazz-guitar soloist, is on hand through Sunday, Jan. 31; on Tuesday, Feb. 2, tenor saxophonist **STAN GETZ** will bring in his latest quartet. The first set begins about nine. Dining. Closed Mondays.

Ginger Man, 51 W. 64th St. (399-2358)—In the less frenetic area of this restaurant, one will find vintage jazz musicians performing with vigor and skill the music from their youth—the twenties, thirties, and forties. Trombonist **EDDIE DURHAM,** guitarist **AL CASEY,** bassists **AL HALL** (on Saturdays) and **JOHNNY WILLIAMS** (on Thursdays and Fridays), tenor saxophonist **EDDIE CHAMBLEE,** pianist **GENE RODGERS,** trumpeter **BOBBY WILLIAMS,** and drummer **TOMMY BENFORD**—collectively, the **HARLEM BLUES AND JAZZ BAND**—perform from nine on Thursdays, Fridays, and Saturdays.

Greene Street, 101 Greene St., near Prince St. (925-2415)—A sort of indoor *piazza del popolo* for SoHo tourists and the *popolo* who can afford to live there. There are brick walls and archways, lots of vegetation (in pots), wicker furniture, and balcony vistas. The schedule: Wednesday, Jan. 27, saxophonist **EDDIE DANIELS;** Thursday through Saturday, Jan. 28-30, R. & B. singer **RUTH BROWN;** Monday, Feb. 1, pianist **BROSS TOWNSEND,** bassist **BOB CUNNINGHAM,** and vibraharpist **STEVE NELSON;** Tuesday and Wednesday, Feb. 2-3, saxophonist **BILL SAXTON;** and Thursday through Saturday, Feb. 4-6, Platinum Hook, a soul quintet. On Sundays, a band called Kenia performs Brazilian music. Sets begin at eleven Tuesdays through Saturdays, and at ten-thirty on Sundays and Mondays. Dining.

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Gregory's, 1149 First Ave., at 63rd St. (371-2220)—Guitarist **CHUCK WAYNE** heads up a trio on Mondays and Tuesdays; Wednesdays through Sundays, guitarist **JOE PUMA** holds down the fort with pianist **HOD O'BRIEN,** bassist Ronnie Markowitz, and vocalist Alicia Sherman. These groups play from ten. Pianist Don Golson works nightly from seven to ten except Sundays, when singer Kitt Moran and pianist Mike Moran take over the place from five until ten.

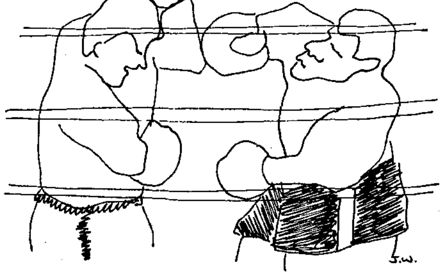
Griff's Plaza Café, Third Ave. at 37th St. (867-7179)—The *plaza* is the open-air terrace that wraps around this second-story restaurant. The inside is pleasant and modern and warmer. Pianist Mike LeDonne leads a trio from eight to midnight Tuesdays through Fridays, from nine to one on Saturdays.

Hanratty's, 1754 Second Ave., at 91st St. (289-3200)—An East Side counterpart of a well-known arty upper West Side bar and restaurant of the same name. On Sunday and Monday, Jan. 31-Feb. 1, pianist Hal Schaefer will be at the dining-room grand, and beginning Tuesday, Feb. 2, stride-piano specialist **DICK WELLSTOOD** will move in. The music runs Tuesdays through Thursdays from nine to one, Fridays and Saturdays from ten to two, and Sundays and Mondays from seven-thirty to eleven-thirty.

Hors d'Oeuvrerie, at Windows on the World, 107th Floor, 1 World Trade Center. (938-1111)—Pianist **MARTY NAPOLEON** directs a trio some thirteen hundred feet above sea level for listening and dancing Tuesdays through Saturdays from seven-thirty to twelve-thirty. Bob Curtis is the pianist who alternates with the trio after nine.

Jazzmania Society, 40 W. 27th St. (532-7666)—A much bigger, airier space than its previous quarters. Thursdays are the property of the New York Samba Band, an octet; on Friday and Saturday, Jan. 29-30, pianist **HAROLD DANKO** will lead a quintet; and on Friday and Saturday, Feb. 5-6, pianist **MICKEY TUCKER** will front a group that will include trombonist **SLIDE HAMPTON,** saxophonist **JUNIOR COOK,** and trumpeter **BILL HARDMAN.** Music from about eight-thirty; on Fridays and Saturdays, following the regular sets—which ought to be about one in the morning—saxophonist-proprietor Mike Morgenstern jams with a bunch of musical colleagues.

Jimmy Ryan's, 154 W. 54th St. (664-9700)—This club and Eddie Condon's, just a tiddledywink's hop east, demarcate a little slice of what West 52nd Street—now labelled Swing Street for tourists but known in earlier times to the initiated as simply The Street—was like thirty, forty, and more years ago, when it was swing and bebop world headquarters and rows of town houses housed jazz clubs. The two present-day 54th Street establishments cling strongly to traditional jazz. Ryan's house band led by trumpeter Spanky Davis lets loose Tuesdays through Saturdays. On Mondays, **MAX KAMINSKY** is in charge. Music weeknights from nine-thirty to three. On Sundays, Kaminsky directs another group of musical archivists from eight until two.



Knickerbocker Saloon, 33 University Pl., at 9th St. (228-8490)—A pleasant corner restaurant and bar that is crowded with good listeners, and for good musical reasons. Superbassist **RON CARTER** and his longtime colleague, pianist **CEDAR WALTON,** collaborate through Saturday, Jan. 30; on Tuesday, Feb. 2, pianist **FRED HERSCH** and bassist **BUSTER WILLIAMS** will come in. Sundays and Mondays, **JUNIOR MANCE** and **MARTY RIVERA** play some bouncing, bluesy jazz duets. Music from ten.

Lone Star Café, 61 Fifth Ave., at 13th St. (242-1664)—An authentic Texas hangout for expatriate Texans, for New Yorkers, and for French tourists. The music is usually good, solid blues, rock, folk, or country, and it starts after eight-thirty. Part of the schedule: Wednesday, Jan. 27, Peter Aykroyd & the Mini Fourteens; Thursday, Jan. 28, blues and rock guitarist Roy Buchanan; and Monday, Feb. 1, Gary Morris. Dining.

Lush Life, 184 Thompson St., at Bleecker St. (228-3788)—A brand-new jazz club. Pianist and composer **MUHAL RICHARD ABRAMS** leads a quartet through Saturday, Jan. 30; on Sunday, Jan. 31, pocket trumpeter **DON CHERRY,** bassist **CHARLIE HADEN,** and drummer **ED BLACKWELL** will get together; Monday and Tuesday, Feb. 1-2, will belong to pianist **ALBERT DAILEY'S** quartet; and on Wednesday, Feb. 3, saxophonist **JOE HENDERSON** will arrive for a four-night visit with his quartet. Sets begin at nine-thirty, eleven-thirty, and one nightly. Dining.

Marty's, 1265 Third Ave., at 73rd St. (249-4100)—The singer's room in this restaurant of many rooms (take a right, then a left to get to it) is now a comedian's room as **MORT SAHL,** newspaper in hand, briefs audiences. His shows run Mondays through Thursdays at nine and eleven, and Fridays and Saturdays at ten and midnight. Dining.

Michael's Pub, 211 E. 55th St. (758-2272)—**GEORGE SHEARING,** always a melodist and sometimes a breathy vocalist, too, has settled in to work with his bassist, **BRIAN TORFF,** Tuesdays through Saturdays from nine-fifteen. On Monday nights from nine-thirty to midnight, the New Orleans Funeral and Ragtime Band occupies the bandstand. Dining. Closed Sundays.

Mikell's, 760 Columbus Ave., at 97th St. (864-8832)—The hippest spot on Columbus Avenue, contrary to popular belief, does not sell homemade chutney; it is this R. & B. and jazz club. The lineup: Wednesday, Jan. 27, Dave Tofani; Thursday, Jan. 28, Doc Powell; Friday and Saturday, Jan. 29-30, African-funk trumpeter **HUGH MASEKELA;** Sunday, Jan. 31, Full Hand; Monday, Feb. 1, Miles Jaye; and Saturday, Feb. 6, hard-bop drummer **ROY HAYNES.** Music from about ten until two. Dining.

Other End, 149 Bleecker St. (673-7030)—Folk, blues, rock, and jazz in an intimate room that has fine sight lines to the stage. **MARY TRAVERS** sings here on Wednesday, Jan. 27. On Tuesday, Feb. 2, a band called Shade will be onstage. Thursdays are claimed by the stirring rhythm-and-blues sextet the **ENCYCLOPEDIA OF SOUL.** Mondays are given over to a showcase from nine-thirty. Shows most nights at nine and eleven-thirty, on Fridays and Saturdays at nine and midnight. Dining.

Peacock Alley, in the Waldorf-Astoria, Park Ave. at 49th St. (355-3000)—**JIMMY LYON** is playing piano in this quiet room, which functions as a sort of passageway connecting the hotel lobby with a dining room. Mr. Lyon, who has accompanied Mabel Mercer throughout the past decade, has a touch that seems magically smooth and cushioned, and his timing is unassailable. He's on hand Tuesdays through Saturdays from six to ten.

Peppermint Lounge, 128 W. 45th St. (719-3176)—A big rock-and-rollers' space that could be even bigger, since it's usually very crowded, with a balcony to survey it all from. Wednesday, Jan. 27, the Coma-teens; Thursday, Jan. 28, the Necessaries and Khmer Rouge; Friday, Jan. 29, the Bloods; Saturday, Jan. 30, the Fleshtones; and Sunday, Jan. 31, Bad Brains. The music *might* begin before midnight.

Rainbow Room, 30 Rockefeller Plaza. (757-9090)—Art Deco-land high atop the RCA Building

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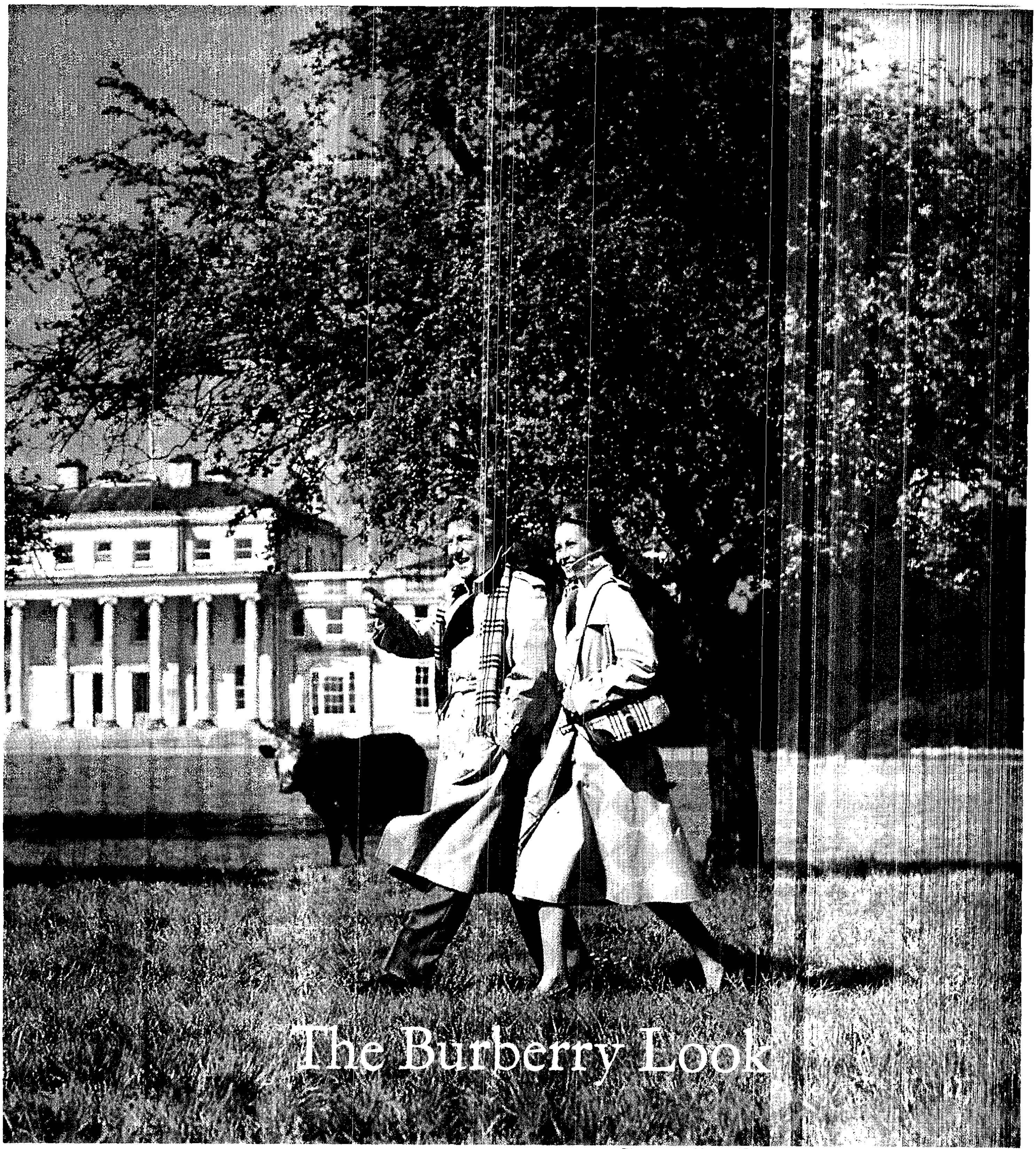

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GOINGS ON ABOUT TOWN

—one almost expects to see Fred and Ginger pop up from behind a table. **PANAMA FRANCIS** and his **SAVOY SULTANS** make it virtually impossible not to want to Lindy Tuesdays through Thursdays from seven to one, Fridays and Saturdays from eight to two, and Sundays from six to midnight. Dining.

ed Blazer Too, 1576 Third Ave., at 88th St. (876-0440)—A large, busy establishment that has a slightly touristy feel to it. Traditional jazz is presented from about nine every night but Sunday, when it begins at seven. Dining.

itz, 119 E. 11th St. (254-2800)—A ballroom that dates from 1935, when the building was remodelled—the building itself dates from 1889—to accommodate neighborhood social-club dances. It has been turned into a sort of Avalon Ballroom East. Rock from the fifties, sixties, seventies, and eighties. Friday and Saturday, Jan. 29-30, the Rockats; Tuesday, Feb. 2, the Jean Beauvoir band; Thursday, Feb. 4, Bob January & the New York Satin Swing Band; and Friday and Saturday, Feb. 5-6, Fingerprintz. Shows tend to begin sometime after midnight. Dancing.

t. Regis–Sheraton, Fifth Ave. at 55th St. (753-4500)—One of the prettiest hotel lobbies in the city leads to one of the most stunning hotel night spots in the city, the King Cole Room. Lately, it could be renamed the House of Tributes. The current tribute, "Can't Help Singing . . . a salute to . . . Jerome Kern," features a cast of four: Cris Groenendaal, Judy Kaye, Armelia McQueen, and Ken Page. Shows Mondays through Thursdays at nine-thirty, and Fridays and Saturdays at nine-thirty and eleven-thirty. Dining.

eventh Avenue South, 21 Seventh Ave. S., at Leroy St. (242-4694)—A light, airy second-floor jazz club, in which most of the walls are refreshingly austere. Much of the music is amplified jazz-rock, and it runs from nine-thirty. The lineup: Wednesday, Jan. 27, Bob Mintzer; Thursday and Friday, Jan. 28-29, drummer Ronnie Burrage; Saturday and Sunday, Jan. 30-31, drummer **LENNY WHITE,** trombonist **SLIDE HAMPTON,** trumpeter **RANDY BRECKER,** and bassist **BUSTER WILLIAMS;** Tuesday, Feb. 2, vibraharpist **MIKE MAINIERI** and pianist **WARREN BERNHARDT;** and Thursday through Sunday, Feb. 4-7, saxophonist, flutist, and singer **JAMES MOODY.**

tar and Garter, 105 W. 13th St., near Sixth Ave. (242-3166)—An attractive but not pretentious bar and restaurant—yet another Village spot that lures in good musicians. Friday and Saturday, Jan. 29-30, will be claimed by pianist **KENNY BARRON** and his trio; on Friday and Saturday, Feb. 5-6, pianist **CEDAR WALTON** will work with bassist **RON CARTER.** Music from about ten.

weet Basil, 88 Seventh Ave. S., at Bleecker St. (242-1785)—A bustling, knotty-pine room. Tenor saxophonist **ARCHIE SHEPP** heads up a quintet through Saturday, Jan. 30; on Sunday and Monday, Jan. 31-Feb. 1, **TINY GRIMES** will play his four-string, tenor guitar and lead his combo; and on Tuesday, Feb. 2, **EDDIE (CLEANHEAD) VINSON,** a bluesy alto saxophonist and a cutting R. & B. vocalist, will come in with his quartet. Shows from about ten. Dining.

ramps, 125 E. 15th St., at Irving Pl. (777-5077)—Simple surroundings, sublime blues, R. & B., and occasional reggae music. Wednesdays through Saturdays, **COUSIN JOE,** a New Orleans entertainer (his real name is Pleasant Joseph), is at the piano playing and singing blues songs—funny ones, sneaky ones, low-down ones, and bone-chilling ones. If you wander in on Tuesday nights, you'll find the **UPTOWN HORNS,** a basic-blue soul nonet, setting fire to James Brown's "The Chicken," Steely Dan's "Peg," "Night Train" (that high-school stage-band chestnut), and Jackie Wilson's "Baby Work Out." Shows begin sometime after nine-thirty.

rax, 100 W. 72nd St., near Columbus Ave. (799-1448)—Rock and roll downstairs. The understated entrance is easy to miss. Some of the musicians: Wednesday, Jan. 27, Revenge and Richard Thorn & the Side Effects; Thursday, Jan. 28, TV Toy and Pedestrians; Friday, Jan. 29, Single Strings and Gentz; Saturday, Jan. 30, Eat Right with Stu Daye and Velveteen; and Monday, Feb. 1, **FINN & THE SHARKS.** Music after eleven, usually. Dancing.

illage Gate, 160 Bleecker St. (475-5120)—On Mondays, exuberant, adept salsa bands take over the big downstairs room at nine for exuberant audiences; on Monday, Feb. 1, the bands will be Orquesta Broadway and the Larry Harlow orchestra, and their guest soloist will be flutist Dave Valentin. Tuesdays, jazz harpist **DAPHNE HELLMAN** performs from nine on the Terrace.

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Village Vanguard, 178 Seventh Ave. S., at 11th St. (255-4037)—Proprietor and author ("Live at the Village Vanguard") Max Gordon once described his club in a radio interview: "It's a good joint that people like to come to—thank God." Guitarist **KENNY BURRELL** and his trio perform through Sunday, Jan. 31; on Tuesday, Feb. 2, pianist **MAL WALDRON** will come in with tenor saxophonist **CHARLIE ROUSE,** trumpeter **BENNY BAILEY,** bassist **REGGIE WORKMAN,** and drummer **ED BLACKWELL.** Mondays are **MEL LEWIS** big-band blast-off nights. Music from ten.

West Boondock, 114 Tenth Ave., at 17th St. (929-9645)—A dark, extremely likable, out-of-the-way soul-food place with things—hundreds, possibly thousands, of icicle-like glass drops (the kind that are usually part of chandeliers) and a handful of opaque-glass light fixtures from the twenties—hanging from the ceiling. Mondays through Wednesdays, Hank Johnson is the pianist; Thursdays through Sundays, pianist Tom Regus has the floor. Music from eight-thirty to two.

West End, 2911 Broadway, at 113th St. (666-8750)—Past the steam tables of piping-hot student food, beyond the pinball machines, is a room full of mostly swing music. The mostly swing music: the great drummer **JO JONES** directs a quartet through Sunday, Jan. 31, and on Tuesday, Feb. 2; on Wednesday, Feb. 3, saxophonist **WILLIS (GATER TAIL) JACKSON** will bring in a quintet. On Mondays, pianist Gene Rodgers is present with a quartet. Music nightly from about nine.

JAZZ / FOLK / ROCK CONCERTS, PERSONAL APPEARANCES, ETC.

Sarah Vaughan and Zoot Sims—Beacon Theatre, Broadway at 74th St. 874-1717. Friday and Saturday, Jan. 29-30, at 8.

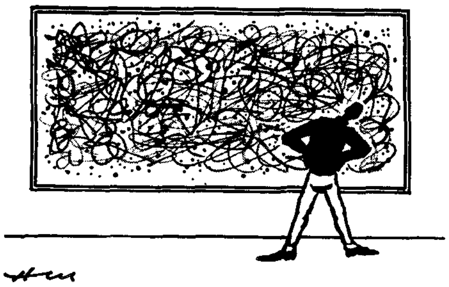
Heavenly Jazz Concert Series—The last in a series of four performances, this one featuring pianists Kenny Barron and Joanne Brackeen. (Church of the Heavenly Rest, Fifth Ave. at 90th St. Sunday, Jan. 31, at 5. For information about tickets, call 369-8040.)

Bobby and the Midnites—With Billy Cobham, Bob Weir, Alphonso Johnson, and others. (Palladium, 126 E. 14th St. Wednesday, Feb. 3, at 7:30. For information about tickets, call 977-9020.)

Jazz Forum—Jazz in a fifth-floor loft. Wednesday, Jan. 27, at 10 and midnight: The Loft Band, with Lew Soloff, Bob Moses, and Barry Rogers. . . . ¶ Sunday, Jan. 31, at 9: Pé-De-Boi. (Jazz Forum, 648 Broadway, at Bleecker St. 477-2655.)

Savoy—Monday and Tuesday, Feb. 1-2, at 9: Al DiMeola and The Electric Rendezvous Tour, with Jan Hammer, Steve Gadd, and others. . . . ¶ Wednesday through Saturday, Feb. 3-6, at 9: Angela Bofill. (Savoy, 141 W. 44th St. 921-9490.)

Soundscape—New music and jazz in a fifth-floor loft. Saturday, Jan. 30, at 9:30: Oliver Lake and Jumpup. . . . ¶ Tuesday, Feb. 2, at 10: Daniel Ponce. . . . ¶ Friday, Feb. 5, at 9:30: Nana Vasconcelos. . . . ¶ Saturday, Feb. 6, at 9:30: Beaver Harris-Don Pullen 360-Degree Music Experience. (Soundscape, 500 W. 52nd St. 581-7032.)



ART

(Unless otherwise noted, galleries are open Tuesdays through Saturdays from around 10 or 11 to between 5 and 6.)

GALLERIES—UPTOWN

Akira Arita—Realist drawings and paintings of still-lifes; first one-man show in New York. Through Saturday, Feb. 6. (Staempfli, 47 E. 77th St.)

Tony DeLap—Recent freestanding sculptures (of wood, metal, and glass) and related drawings. Through Wednesday, Feb. 3. (Elkon, 1063 Madison Ave., at 80th St.)

Frank Faulkner—New pattern paintings. Through Wednesday, Feb. 3. (Knowlton, 19 E. 71st St.)

Igor Galanin—Recent paintings, surreal in nature and somewhat naïve in style. Through Feb. 27. (Aberbach, 988 Madison Ave., at 77th St.)

Gregory Gillespie—Recent portraits, landscapes, and interiors by a realist who now and again breaks out into surrealism. Through Saturday, Feb. 6. (Forum, 1018 Madison Ave., at 79th St.)

George Herriman (1878-1944) / **John Held, Jr.** (1889-1958)—Twenty-five original ink drawings (dated 1916-30) for "Krazy Kat," one of the pioneer comic strips. Through Saturday, Feb. 6. / Watercolors (of skyscrapers, landscapes, flowers) from a half century or more ago, in no way reminiscent of his better-known cartoons of flappers and sheiks. Through Saturday, Jan. 30. (Graham, 1014 Madison Ave., at 78th St.)

Budd Hopkins—An installation in mixed mediums mounted on the gallery wall (and taking up part of the floor), plus four maquettes for outdoor sculptures; all the work was influenced by Greek temples the artist saw on a trip last summer. Through Feb. 20. (Lerner-Heller, 956 Madison Ave., at 75th St.)

Alice Phillips—Recent abstract paintings. Through Saturday, Feb. 6. (Findlay, 984 Madison Ave., at 77th St. Open Mondays.)

Zelig Segal—Sculptures of unfinished wood, among other works. Through Saturday, Jan. 30. (Urdang, 23 E. 74th St.)

Sandi Slone—Abstract paintings. Through Saturday, Jan. 30. (Acquavella, 18 E. 79th St.)

Walasse Ting—Figurative paintings in acrylic washes on rice paper; some of them are of nudes. Through Friday, Feb. 5. (Lefebre, 47 E. 77th St.)

Fritz Winter (1905-76)—A small retrospective of oils, drawings, and monotypes, from 1929 to 1956. Through Feb. 18. (Weintraub, 992 Madison Ave., at 77th St.)

Adja Yunkers—Abstract paintings from the seventies. Through March 17. (CDS Gallery, 13 E. 75th St. Open Mondays.)

Group Shows—At the **ACA,** 21 E. 67th St.: Paintings by nineteenth-century, early-twentieth-century, and contemporary artists, including Robert Henri, Georgia O'Keeffe, Ernest Fiene, and Jeffrey Kronsnoble. Through Feb. 27. . . . **ADLER-CASTILLO,** in a new location at 58 E. 79th St.: Early twentieth-century Russian art: eleven gouaches by Popova, a watercolor by Kandinsky, and five drawings by Malevich are among the paintings and works on paper by nearly twenty artists. Through Feb. 27. . . . **BROWNE,** 1018 Madison Ave., at 79th St.: Prints, often witty, of people making prints, and of other people looking at prints. Included are one work apiece by Daumier and Toulouse-Lautrec and three by John Sloan. Through Saturday, Jan. 30. . . . **FOURCADE,** 36 E. 75th St.: Pastels by Joan Mitchell and watercolors by Malcolm Morley and Dorothea Rockburne, plus a number of new prints by all three. Through Saturday, Jan. 30. . . . **GIBSON,** 205 E. 78th St.: Five contemporary French artists, Jean Le Gac and Arman among them. Through March 6. . . . **HIRSCHL & ADLER,** 21 E. 70th St.: About a hundred and thirty Amer-

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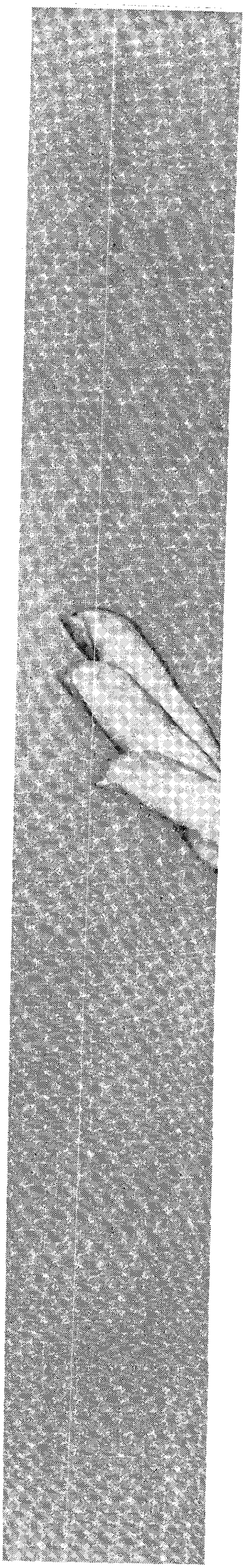

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ican paintings and drawings from the Colonial and Federal periods: Portraits (by, among others, John Singleton Copley, Gilbert Stuart, and anonymous limners), landscapes, and seascapes (John Smibert, Thomas Cole). Through Feb. 10. . . . **Kerr,** 49 E. 82nd St.: Robert Cottingham's Photo-Realist city façades are shown alongside the naturalism of Andrew and James Wyeth in a display of about thirty paintings by a score of twentieth-century American realists. Through Feb. 26. (Open Mondays.) . . . **Saidenberg,** 1018 Madison Ave., at 79th St.: Works by Georges Braque, Paul Klee (paintings), Robert Delaunay, Henri Matisse (drawings), and others. Through Feb. 20. (Opens at 1 on Saturdays.) . . . **Willard,** 29 E. 72nd St.: A diptych by Lois Lane, drawings by Ralph Humphrey, and a ceramic sculpture by Kenneth Price are some of the works on view; twelve artists in all. Through Thursday, Feb. 4.

GALLERIES—57th STREET AREA

Herbert Bayer / Altoon Sultan—Recent paintings (plus photographs from 1925 to 1977) by the Bauhaus elder. / Recent oils, gouaches, and lithographs of Hudson River Valley turn-of-the-century houses. Through Saturday, Jan. 30. (Marlborough, 40 W. 57th St.)

Stanley Boxer / Robert Goodnough—Abstract paintings from the early seventies. / Abstract paintings from the fifties and sixties. Through Wednesday, Feb. 3. (De Nagy, 29 W. 57th St.)

Charlotte Brown—Recent collages incorporating clay, fabric, and handmade paper. Through Feb. 27. (Getler-Pall, 50 W. 57th St.)

Robin Bruch—Bold, simple, bright-colored abstractions evolved from flowers, furniture, and a lively imagination. Through Saturday, Jan. 30. (Kornblee, 20 W. 57th St.)

Diane Burko / Mariann Miller—Panoramic landscapes done with colored pencil on rough paper, producing an almost Pointillist effect. / Romantic, brooding landscapes in oil and oil crayon on canvas. Through Saturday, Jan. 30. (Stefanotti, 30 W. 57th St.)

Sydney Butchkes—Color-field paintings inspired by seascapes on Long Island, plus drawings. Through Feb. 13. (Touchstone, 29 W. 57th St.)

Anthony Caro / Hans Hofmann (1880-1966)—Large abstract bronzes, plus smaller, table-size works, also in bronze. / Twenty small-scale late-period paintings that once hung in the artist's home. First public viewing for a number of them. Through Saturday, Jan. 30. (Emmerich, 41 E. 57th St.)

Jack Chevalier—Wall pieces with a pronounced American Indian feeling, constructed of wood, paper, paint, and beading by a Seattle artist. First one-man show in New York. Through Saturday, Jan. 30. (Pam Adler, 37 W. 57th St.)

Jeanette Chupack—Acrylic paintings—still-lifes of vegetables and napery and fruits inside the artist's studio, and clear views of the Vermont landscape outside. Through Saturday, Jan. 30. (Tatistcheff, 38 E. 57th St.)

James Coignard—Sketchy architectural forms, hints of floor plans, and bits of Spencerian penmanship are perceptible in these abstract collages done on crusty, heavy-duty handmade paper, sometimes as thick as a bath mat. Through Feb. 13. (Alex Rosenberg, 20 W. 57th St. Open Mondays.)

Maurice Freedman—Expressionist landscapes and still-lifes done over the past fifty years on the Mediterranean, in Maine, and in various other parts of the world. Through Feb. 27. (Midtown, 11 E. 57th St.)

Sonia Gechtoff—New abstract works: a different selection from (but faithful in style to) her previous show, which ran at this gallery during the past month. Through Feb. 13. (Gruenebaum, 38 E. 57th St.)

Sidney Gordin—Recent geometric paintings, plus collages and reliefs. Through Saturday, Feb. 6. (Deutsch, 20 W. 57th St.)

Robert Graham—Four female nudes (two in bronze, one in porcelain, and one in stoneware), in the stiff-standing poses this artist prefers, plus a standing mare in bronze, about one-third life-size. Through Wednesday, Feb. 3. (Miller, 724 Fifth Ave., at 57th St.)

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Philip Guston (1913-80)—A series of colored acrylics on paper, done in the six months before the artist's death, and not seen here before. Through Feb. 9. (McKee, 41 E. 57th St.)

Susan Hall / John Willenbecher—Paintings, among them a twelve-foot canvas showing a huge, brightly lit ocean liner being herded along at night by a company of tugs. / Constructions: a large Masonite panel and several classical-looking niches framed in wreaths of laurel, all painted to look like marble. Through Saturday, Jan. 30. (Hamilton, 20 W. 57th St.)

Craig Kauffman—Elements of still-lifes and interiors enlarged and rearranged in these light-colored abstractions, in which pale yellows seem to predominate. Through Feb. 13. (Blum Helman, 20 W. 57th St.)

Ed Kerns / František Kupka (1871-1957)—Collage paintings, dating back to his richly painted, thinly layered works of the mid-seventies and moving up to the denser, muted-tone panels of the present. / Early gouaches and woodcuts. Through Saturday, Jan. 30. (Esman, 29 W. 57th St.)

Maud Morgan / Sandra Lerner—New collages, made of Japanese mulberry paper. / Subtly textured, abstract paintings influenced by the gardens and mountain scenery of Japan. Through Feb. 13. (Parsons, 24 W. 57th St.)

Ree Morton (1936-77)—Drawings in this artist's highly personal style, including studies of weeds of the Northeast. . . . ¶ In the back room is a sizable group of avant-garde Russian posters made when Russia had an avant-garde, which is to say in the twenties and thirties. Through Saturday, Feb. 6. (Protetch, 37 W. 57th St.)

Pedro Perez—Boisterous acrylic paintings, decked with papier-mâché insets, glitter, chiffon, feathers, and sometimes fourteen-karat gold leaf, by a Cuban-born artist whose works have the spontaneity and vigor of graffiti. First one-man show in New York. Through Thursday, Feb. 4. (Pearl, 29 W. 57th St.)

Irving Petlin—Large canvases (ten feet by eight) on which a big egg-shaped outline frames various amorphous figures in misty, surreal settings. Through Feb. 20. (Odyssia, 730 Fifth Ave., at 57th St.)

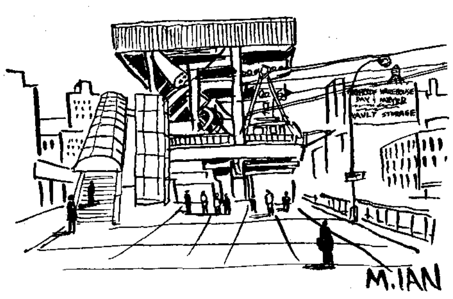
Jim Reed—Paintings, often depicting scenes of the South, with photographs incorporated into—or substituting for—canvas. Through Saturday, Feb. 6. (Heidenberg, 50 W. 57th St.)

Rolph Scarlett—A series of small nonobjective gouaches painted in 1940 by an artist, now ninety-two, who was deeply influenced by the Russian Constructivist movement. Through Saturday, Feb. 6. (Washburn, 42 E. 57th St.)

Dee Shapiro—Recent abstract paintings. Through Saturday, Feb. 6. (Zarre, 41 E. 57th St.)

Hollis Sigler—A narrative series of drawings and paintings. Through Thursday, Feb. 4. (Gladstone, 41 W. 57th St.)

Geri Taper—A two-gallery, one-woman show: multicolored calligraphic figures in a grid format at Haber Theodore, and vaguely hourglass figures at Sachs. Through Saturday, Jan. 30. (Both galleries at 29 W. 57th St.)



Alan Turner—"The Marked Woods," and other paintings by an artist who is attracted to wooded landscapes and finds many different ways of seeing the same stand of trees. Through Tuesday, Feb. 2. (Alexander, 20 W. 57th St.)

Jerome Witkin—About two dozen oils (including a large narrative triptych entitled "Death as an Usher: Germany, 1933") by a realist. Through Saturday, Feb. 6. (Kraushaar, 724 Fifth Ave., at 57th St.)

Twenty Galleries / Twenty Years—Twenty dealers showing, in two galleries, two paintings each (one early, one late) by artists whom they have represented for two decades or longer—Pierre Matisse (Loren MacIver), Allan Stone (Wayne Thiebaud), Betty Parsons (Kenzo Okada), to name a few. Through Thursday, Feb. 4. (The early works are at Terry Dintenfass, 50 W. 57th St.; the later ones at Grace Borgenicht, 724 Fifth Ave., at 57th St.)

Group Shows—At the **Galerie St. Etienne,** 24 W. 57th St.: Paintings by nineteenth- and twentieth-century European and American folk artists, including Edward Hicks, Henri Rousseau, and Grandma Moses. Through March 6. . . . **Kennedy,** 40 W. 57th St.: Two portraits by John Singleton Copley, examples of the Hudson River school (Bierstadt, Heade), two bronzes by Leonard Baskin, and two of Joseph Hirsch's last paintings are among the sixty-three works on view. Through Friday, Feb. 5. (Open Mondays; closed Saturdays.) . . . **Pace,** 32 E. 57th St.: Paintings and sculptures by seven artists who received their training at the Art Institute of Chicago: Roger Brown, Philip Hanson, Jim Nutt, Ed Paschke, Suellen Rocca, H. C. Westermann, and Karl Wirsum. Through Feb. 13. . . . **Signs,** 37 W. 57th St.: A survey of Cuban painting and drawing over the past fifty years, sanctioned by their government and ours. The first of a three-part exhibition by artists of the island. Through Feb. 27. . . . **The Urban Center,** 457 Madison Ave., at 51st St.: McKim, Mead & White's New York, in photographic reproductions (of architectural drawings, of other photographs): the Washington Square Arch, the original Madison Square Garden, and so forth. Through Feb. 12. (Open Mondays.) . . . **Zabriskie,** 29 W. 57th St.: Wall sculptures (by Alexander Archipenko, John Storrs, Mary Frank, and others) which have the human figure as their common theme. Through Saturday, Feb. 6. (Open Mondays.)

GALLERIES—SoHo

Dennis Ashbaugh—New abstract paintings. Through Saturday, Jan. 30. (Cowles, 420 West Broadway.)

Robert Beauchamp / Fred Mitchell—Large oils of mythical landscapes populated by fantastic figures and animals. / Abstract watercolors. Through Wednesday, Feb. 3. (Landmark, 469 Broome St. Opens at 11:30 Tuesdays through Fridays, at noon Saturdays.)

Joseph Beuys—Souvenirs from performances by this German art-world celebrity—basins he washed people's feet in, photographs, documents, scribbled drawings. Through Feb. 13. (Feldman, 31-33 Mercer St.)

William N. Copley—Recent comic, bawdy paintings. Through Saturday, Jan. 30. (Kind, 139 Spring St.)

Tom Doyle—A massive sculpture of pine beams, ten feet high and twenty-six feet long, plus maquettes for this and other works. Also monoprints that reproduce the grain of the wood in some of the maquettes. Through Saturday, Jan. 30. (Hutchinson, 138 Greene St.) . . . ¶ A walk-through white-pine-and-red-oak sculpture has been installed at the Hammarskjöld Plaza Sculpture Garden, Second Ave. at 47th St. Through April 4.

Lesley Dumbrell and John Firth-Smith—Abstract paintings by two leading contemporary Australian artists: geometric works by the former, and more loosely based, monochromatic canvases by the latter. Through Saturday, Jan. 30. (Cuningham, 94 Prince St. Opens at 2 on Saturdays.)

Louis Finkelstein—Classical subjects revisited in large oil paintings. Through Wednesday, Feb. 3. (Ingber, 460 West Broadway.)

Leon Golub—A series of paintings entitled

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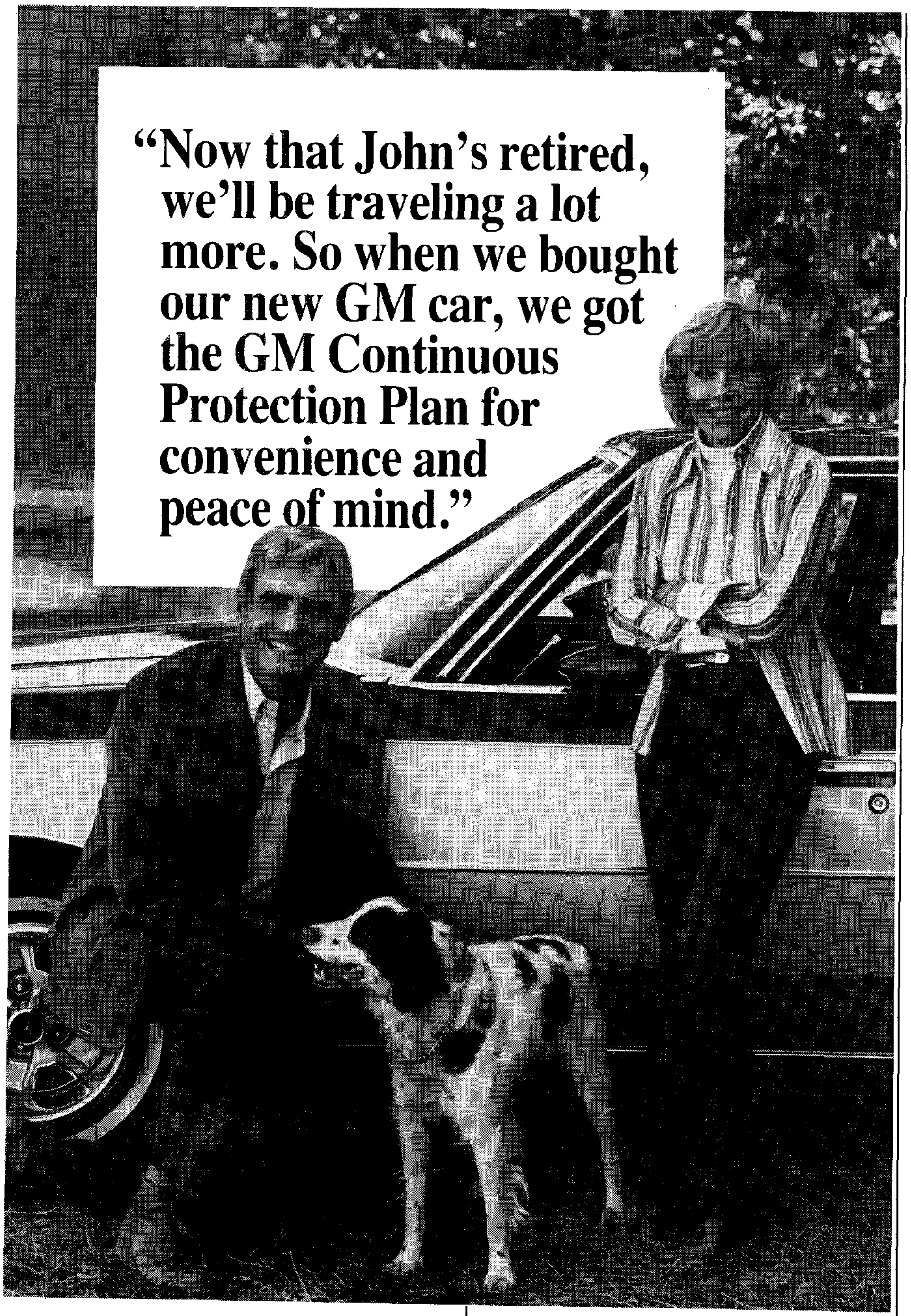

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"Mercenaries and Interrogations," and portraits of political figures (Kissinger, Franco). Through Saturday, Jan. 30. (Caldwell, 383 West Broadway.)

Nancy Holt—An installation of electrical devices, assembled like a large erector set, representing the wires and conduits in household electrical systems. Through Saturday, Jan. 30. (Weber, 142 Greene St.)

Bruce McLean—Raw paintings involving figures, done in bright acrylic colors. Through Wednesday, Feb. 3. (Boone, 417 and 420 West Broadway.)

Carolyn Parker / Jackie Carson—Photo-Realist paintings of buildings. / Abstract paintings. Through Saturday, Jan. 30. (Starkman, 465 West Broadway. Opens at noon.)

Robert Rohm / Rikuro Okamoto—Large, sanded-wood sculptures of what look like sensible, useful machines but aren't. / Sculptures of two huge boulders, both very lifelike. . . . ¶ In one of the back rooms, Don Celender presents the findings of another of his deadpan surveys, this time concerning the safeguards taken by custodians of various works of art. Through Saturday, Jan. 30. (O. K. Harris, 383 West Broadway.)

Edith Seltzer—Recent paintings of color-related, geometric patterns. Through Feb. 14. (Pleiades, 152 Wooster St. Open Sundays.)

Joel Shapiro—Drawings in black, black, charcoal lines, mostly abstract but some related to the figure; the artist is best known as a sculptor. . . . ¶ Single works by some of the gallery regulars in the front room—Alan Shields, Donald Judd, and Lynda Benglis, for example. Through Saturday, Feb. 6. (Cooper, 155 Wooster St.)

Andy Spence—Clean-cut geometric forms painted on sharply contrasting solid-color grounds, plus preparatory drawings. Through Saturday, Jan. 30. (Toll, 146 Greene St.)

Joyce Stillman-Myers / Murray Alcosser—Superrealist pastels of candy. / Recent photographs: still-lifes of flowers. Through Saturday, Jan. 30. (Meisel, 141 Prince St.)

Michael Tetherow / Sonia Delaunay (1885-1979)—Huge faces, reminiscent of those on Indian masks or totem poles, sketchily painted on large canvases. / A collection of this artist's original fabric designs. Through Thursday, Feb. 4. (Bonlow, a recently opened gallery at 150 Greene St., at the corner of Houston.)

Boaz Vaadia—A trestle just under twenty-six feet long and made of raw cedar posts supports a roadway of bluestone slabs, and there are smaller pieces in the same materials. Through Saturday, Jan. 30. (Meyer, 410 West Broadway.)

Andy Warhol / Bruce Nauman—Another silk-screened multiplication of Marilyn Monroe's face, on two panels, each about thirty-five feet long, at Castelli, 420 West Broadway, and basement walls full of silk-screened dollar marks, in various sizes, at Castelli, 142 Greene St. / Three large geometric sculptures, with the unfinished look characteristic of Mr. Nauman's works, at Castelli on Greene Street, and three hanging steel sculptures—a circle, a square, and a triangle, each with a cast-iron chair. in its middle—at Sperone Westwater Fischer, also at 142 Greene St. The exhibits all run through Saturday, Jan. 30.

Group Shows—At **the drawing center**, 137 Greene St.: The first of two installations of a fifth-anniversary show consisting of a hundred and seventy-four of the artists whose work has been featured at the center. Through Feb. 27. (Open Mondays; open Wednesday evenings until 8.) . . . **jack**, 138 Prince St.: Paintings, drawings, and sculptures by Erté, Jean Cocteau, William Crovello, Clayton Pond, and others. Through Sunday, Jan. 31. (Opens Sundays at noon.)

OTHER GALLERIES

Alan Kikuchi-Yngojo / Roseanne Generalli—Collaged color photographs. / Charcoal drawings. Through Saturday, Jan. 30. (Bromm, 90 West Broadway, at Chambers St.)

Mary Ann Unger—A painted-plywood construction that borrows its symmetry and scale from the formal garden. Through Feb. 11. (City University Graduate Center, ground-floor arcade, 33 W. 42nd St. Open Mondays; closed Saturdays.)

PHOTOGRAPHY

John Albok (1894-1982)—A hundred and twenty pictures of New York and its inhabitants, from 1921 to the present, by a Madison Avenue tailor who died recently. Many of the photographs were taken from the window of his shop (above which he lived for sixty years), near Ninety-seventh Street. Through May 4. (Museum of the City of New York, Fifth Ave. at 104th St. Tuesdays through Saturdays, 10 to 5; Sundays, 1 to 5.) . . . ¶ Twenty-two prints by Mr. Albok of New York during the thirties and forties are at the Camera Club, 37 E. 60th St. Through Feb. 19. (Mondays through Fridays, 1 to 5.)

Marilyn Bridges—Sixty aerial photographs of the "ground drawings" attributed to the Nazca Indians of Peru—the titanic (one is over ten miles wide) renderings of plants, animals, and geometric forms which range across thirty miles of a desert plain southeast of Lima and which are thought to date back to 400 B.C. Also included are twenty pieces of Nazca pottery, bearing these same forms and figures—on a more diminutive scale, to be sure. Through Feb. 21. (Center for Inter-American Relations, 680 Park Ave., at 68th St. Daily, except Mondays, noon to 6.)

Robert D'Alessandro—Photographs of landscape and sky (New Mexico) and architecture and sky (New York and other cities). Through Friday, Feb. 5. (Pfeifer, 825 Madison Ave., at 69th St.)

Patrizia della Porta / Edwin Hale Lincoln (1848-1938)—Abstract photographic renderings of architectural details. / Platinum-print studies (made in the photographer's studio) of the wild flowers found in the Berkshires. Through Feb. 13. (Neikrug, 224 E. 68th St. Wednesdays through Saturdays, 1 to 6.)

Harold Edgerton—High-speed studies of bullets being shot through apples and bananas, and of athletes in motion. Through Saturday, Jan. 30. (Wolf, 30 W. 57th St.)

Jill Freedman—Prints from 1968 to the present of policemen and firemen at work by a photojournalist, plus scenic shots of England and Ireland. Through Saturday, Jan. 30. (Photograph, 724 Fifth Ave., at 57th St.)

Werner Mantz—Architectural photographs taken in Germany during the twenties and thirties. Through March 6. (Prakapas, 19 E. 71st St. Open Tuesday evenings until 8.)

Hans Namuth—Color portraits of Edward Hopper, Willem de Kooning, Lee Krasner, Louise Nevelson, and other twentieth-century artists. Through Saturday, Jan. 30. (Castelli, 420 West Broadway.)

Robert Rauschenberg—Photographic studies of Manhattan. Through Saturday, Jan. 30. (Sonnabend, 420 West Broadway.)

Eve Sonneman—Eight large prints: "N. Y. Cops on Suicide Pillow" and "Roller Coaster Fire" are the titles of two. Through Saturday, Jan. 30. (Castelli Photographs, 4 E. 77th St.)

Arthur Taussig / Niki Logis—Photographs. / A large-scale painted-wood sculpture, plus related models. Through Feb. 13. (Freidus, 158 Lafayette St., near Grand St.)

George A. Tice—A retrospective of photographs from the past three decades. Through Saturday, Jan. 30. (Witkin, 41 E. 57th St.)

Nineteenth-Century German Photography—More than two hundred photographs on loan from the Agfa-Gevaert museum in Leverkusen, West Germany, in a show that documents the early work and subsequent developments in the field: portraits, landscapes, and motion studies. Through Feb. 14. (International Center of Photography, 1130 Fifth Ave., at 94th St. Daily, except Mondays, 11 to 5, and Tuesday evenings until 8.) . . . ¶ In another room at the center: Hugo Erfurth's portraits of Paul Klee (1920), Oskar Kokoschka (1923), Mies van der Rohe (1936), and other members of the German avant-garde. Through Feb. 14.

MUSEUMS AND LIBRARIES

Metropolitan Museum, Fifth Ave. at 82nd St.—The Costume Institute's tenth annual fashion show, focussing primarily on the eighteenth-century French woman but also encompassing her European and American counterparts. . . . ¶ "The Dance Master's Kit," a display in the musical-instruments galleries of fifty-one of the bowed, pocket-size stringed instruments, called "kits," used by dancing masters from the seventeenth century through the nineteenth. Stradivari and Guarneri each made one. Through Sunday, Jan. 31. . . . ¶ Sixty twentieth-century French drawings and watercolors from the Robert Lehman Collection. Edouard Vuillard, Aristide Maillol, and Henri Matisse are here, and so is a large series of watercolors by Paul Signac. Through March 14. (Open daily except Mondays. Hours: Tuesdays, 10 to 8:45; Wednesdays through Saturdays, 10 to 4:45; Sundays, 11 to 4:45.)

Museum of Modern Art—The museum will be closed for a few months for construction work.

Guggenheim Museum, Fifth Ave. at 89th St.—"Kandinsky in Munich: 1896-1914," the first of three exhibits planned by the museum (to be held at two-year intervals) to follow the artist's development as influenced by the various cities where he lived. Most of the nearly three hundred works assembled here (paintings, works on paper, furniture and ceramic designs, art-related books) are by Kandinsky himself, most are on loan, and all are intended to show the interrelation between the artist and the city where he arrived, at the age of thirty, to begin the formal study of art. Through March 21. . . . ¶ Dan Flavin's fluorescent-light sculpture (first executed for the museum in 1971) will be re-installed for a period of six weeks and ready for viewing on the sixth-floor ramp, starting Friday, Jan. 29. (Open daily except Mondays. Hours: Tuesdays, 11 to 8, with no admission charge from 5 to 8; Wednesdays through Sundays, 11 to 5.)

Whitney Museum of American Art, Madison Ave. at 75th St.—A survey of ceramic sculptures by six California artists: Peter Voulkos, John Mason, Kenneth Price, Robert Arneson, David Gilhooly and Richard Shaw. Through Feb. 7. (Open daily except Mondays. Hours: Tuesdays, 11 to 8, with no admission charge after 5; Wednesdays through Saturdays, 11 to 6; Sundays, noon to 6.)

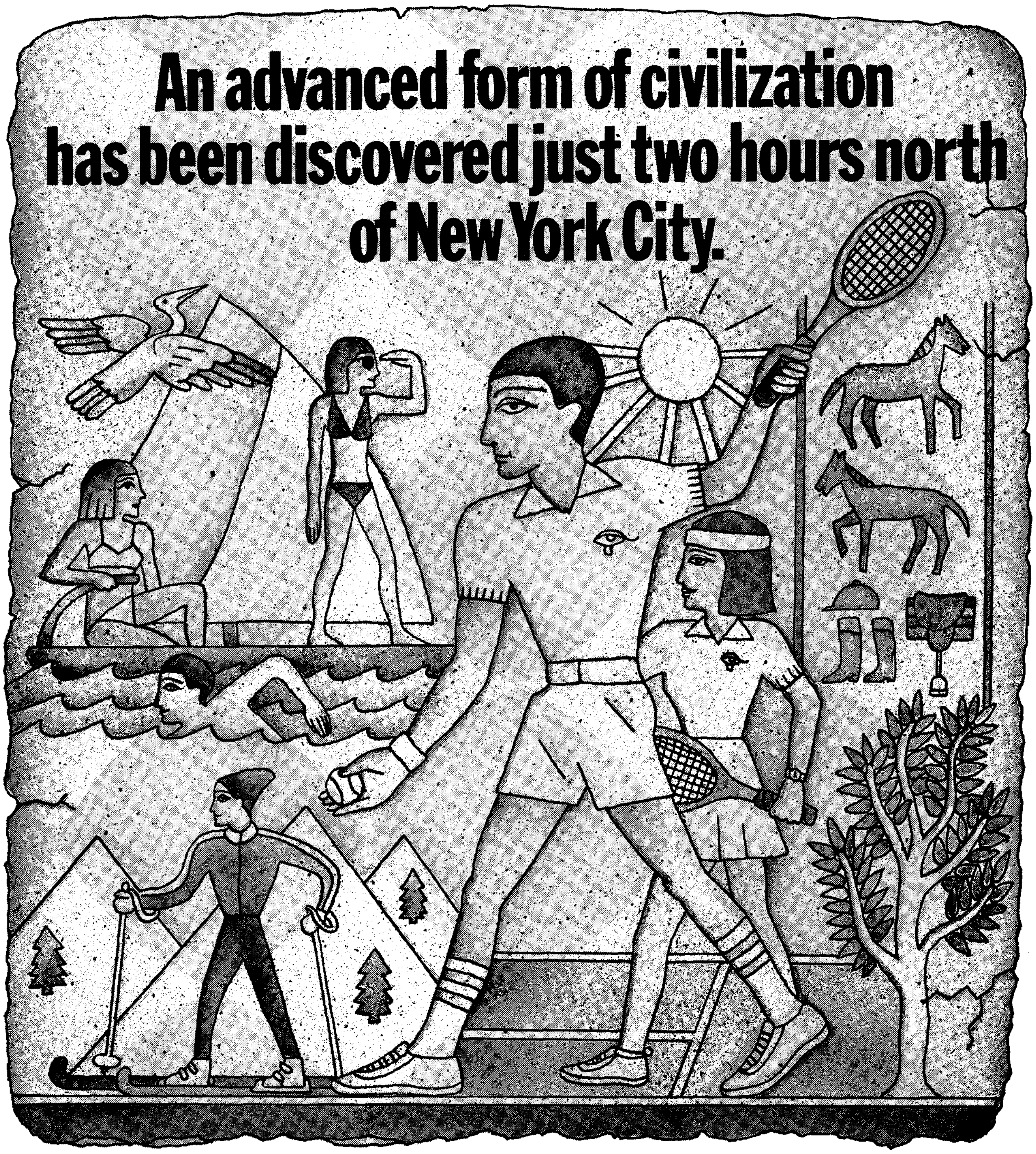
Brooklyn Museum, Eastern Parkway—The permanent collection is the primary reason for a visit right now. (Open Wednesdays through Saturdays, 10 to 5; Sundays, noon to 5.)

Asia Society, 725 Park Ave., at 70th St.—"Eight Dynasties of Chinese Painting," a show of sixty paintings—hanging scrolls, hand scrolls, album leaves, and fans—on silk and paper and dated from the eighth century to the eighteenth. Through Feb. 28. (Open daily except Mondays. Hours: Tuesdays through Saturdays, 10 to 5, and Thursday evenings until 8:30; Sundays, noon to 5.)

China House, 125 E. 65th St.—Thirteen original examples of Chinese calligraphy (ink brushed on silk and on paper) from the Sung (960-1279) and Yüan (1279-1368) dynasties. All the works are from the John M. Crawford, Jr., Collection. Through Sunday, Jan. 31. (Open daily. Hours: Mondays through Fridays, 10 to 5; Saturdays, 11 to 5; Sundays, 2 to 5.)

Cooper-Hewitt Museum, Fifth Ave. at 91st

An advanced form of civilization has been discovered just two hours north of New York City.



On the rim of a clear, blue lake in the lush foothills of the Connecticut Berkshires, a small community of individuals lives a highly evolved style of life.

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The Lakeridge West Lodge.

Lakeridge

Take Hutchinson River Parkway, North to I-684 to Exit 9. East on I-84 to Exit 20. North on Rt. 8 to Exit 46. Follow signs to Lakeridge in Torrington. Offering in the Lakeridge Association, Inc. can be made only by Offering Plan.

St.—More than a hundred original drawings (plus furniture, silver, and ceramics) by the Scottish architect Robert Adam (1728-92), as well as some by those who were influenced by his neoclassical style. Through April 11. (Open daily except Mondays. Hours: Tuesdays, 10 to 9, with no admission charge after 5; Wednesdays through Saturdays, 10 to 5; Sundays, noon to 5.)

Morgan Library, 29 E. 36th St.—An all-inclusive survey of the many worlds of the Reverend Charles Lutwidge Dodgson (a.k.a. Lewis Carroll), the focal point of which is the original 1864 manuscript and drawings of the prototypical "Alice's Adventures Under Ground." Also, five illustrations by John Tenniel for "Wonderland" (which appeared the following year); holographic poems and riddles; photographs; correspondence; and much, much, more. Starts Thursday, Jan. 28, one day after the hundred-and-fiftieth anniversary of Carroll's birth. . . . ¶ A pair of seventy-fifth-anniversary shows, the first consisting of architectural drawings of the Morgan Library as prepared in 1906 by McKim, Mead & White; the other show deals with the architecture of landscaping as practiced by Europeans in the seventeenth and eighteenth centuries and is illustrated with drawings and books. Through Feb. 7. (Open daily except Mondays. Hours: Tuesdays through Saturdays, 10:30 to 5; Sundays, 1 to 5.)

Museum of American Folk Art, 49 W. 53rd St.—Seventy-five woven baskets, originally constructed for egg gathering, bird carrying, backpacking, church collection, and similar tasks but lately come into their own as art objects. Through Feb. 14. (Open daily except Mondays. Hours: Tuesdays, 10:30 to 8, with no admission charge after 5:30; Wednesdays through Sundays, 10:30 to 5:30.)

New York Public Library, Fifth Ave. at 42nd St.—The Berg Collection's nod to the centennials of Virginia Woolf and James Joyce. Excerpts from Woolf's four decades of diaries (from which one learns that she regarded "Ulysses" as "an illiterate, underbred book") are here, as are her letters and essays (in working drafts and final copies) and the bulk of her novels (manuscripts, first editions). The Joyce material focusses on his years in Paris (1920-40) and includes the first English (1922) and French (1929) editions of "Ulysses," along with the many pages of work involved in the translation of the novel. (Open daily, except Sundays and Thursdays, 10 to 6.)

EXPERIMENTAL OUTPOSTS

(Various avant-garde enterprises that may involve not only traditional art but music, video, dance, and so on.)

Artists Space, 105 Hudson St., at Franklin St. Exhibition hours: Tuesdays through Saturdays, 11 to 6.—Installations by Jenny Holzer and Peter Nadin (together), Jim Iserman, Jim Sanborn, and Hudson (a.k.a. Buzz Tone Outlet). Through Feb. 13.

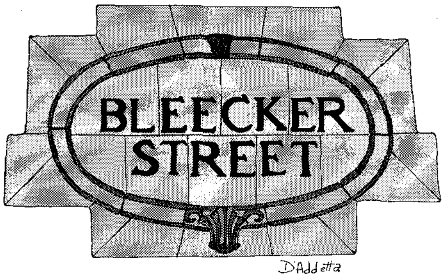
Franklin Furnace, 112 Franklin St. Exhibition hours: Tuesdays through Saturdays, noon to 6.—Nearly a hundred and fifty books by Russian avant-garde writers and artists, from 1910-30. Through Feb. 20. . . . ¶ An exhibition of photocopy art. Through Saturday, Feb. 6.

The Kitchen, 484 Broome St. 925-3615. Exhibition hours: Tuesdays through Saturdays, 1 to 6.—Ton Simons & Dancers (dance), Thursday through Sunday, Jan. 28-31, at 8:30. . . . ¶ An installation (lights, video, sound, and drawings) by Joseph Nechvatal. Through Saturday, Jan. 30.

P. S. 1, 46-01 21st St., Long Island City. Exhibition hours: Thursdays through Sundays, 1 to 6.—Paintings and works on paper in a show (one of many here) in which eight art critics personally invited artists to exhibit work. Lynda Benglis, Michael McClard, and Catherine Porter-Scully are some of the sixty-six selectees. Through March 14.

MUSIC

(The box-office number for the Metropolitan Opera House is 580-9830; for Alice Tully Hall 362-1911; for Avery Fisher Hall 874-2424; for Carnegie Hall 247-7459; for Grace Rainey Rogers Auditorium, Metropolitan Museum, Fifth Ave. at 83rd St., 570-3949; for Kaufmann Concert Hall, 92nd Street Y, Lexington Ave. at 92nd St., 427-4410; and for Merkin Concert Hall, Abraham Goodman House, 129 W. 67th St., 362-8719. Other box-office numbers are included in the listings.)



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31	1	2	3	4	5	6

OPERA

Metropolitan Opera—Wednesday evening, Jan. 27: "La Bohème," with Teresa Stratas, Julia Migenes-Johnson, José Carreras, and Richard Stilwell; conducted by James Levine. . . . ¶ Thursday evening, Jan. 28: "Il Trovatore," with Leontyne Price, Viorica Cortez, Ermanno Mauro, and Louis Quilico; James Conlon. . . . ¶ Friday evening, Jan. 29: A new production of Mozart's "Così Fan Tutte," with Kiri Te Kanawa, Maria Ewing, Kathleen Battle, David Rendall, James Morris, and Donald Gramm; James Levine. . . . ¶ Saturday matinée, Jan. 30: "Tannhäuser," with Leonie Rysanek, Mignon Dunn, Richard Cassilly, and Bernd Weikl; James Levine. . . . ¶ Saturday evening, Jan. 30: "Luisa Miller," with Adriana Maliponte, Bianca Berini, Luciano Pavarotti, and Mario Sereni; Nello Santi. . . . ¶ Monday evening, Feb. 1: "La Bohème," with Teresa Zylis-Gara, Julia Migenes-Johnson, Giuliano Ciannella, and Brent Ellis; James Levine. . . . ¶ Tuesday evening, Feb. 2: "Il Trovatore," with Leontyne Price, Viorica Cortez, Giuseppe Giacomini, and Louis Quilico; James Conlon. . . . ¶ Wednesday evening, Feb. 3: "Così Fan Tutte," with Kiri Te Kanawa, Maria Ewing, Kathleen Battle, David Rendall, James Morris, and Donald Gramm; James Levine. . . . ¶ Thursday evening, Feb. 4: "Tannhäuser," with Leonie Rysanek, Mignon Dunn, Richard Cassilly, and Bernd Weikl; James Levine. . . . ¶ Friday evening, Feb. 5: "La Bohème," with Teresa Zylis-Gara, Patricia Craig, Giuliano Ciannella, and Brent Ellis; James Levine. . . . ¶ Saturday matinée, Feb. 6: "Il Trovatore," with Leontyne Price, Viorica Cortez, Giuseppe Giacomini, and Louis Quilico; James Conlon. . . . ¶ Saturday evening, Feb. 6: "Così Fan Tutte," with Kiri Te Kanawa, Maria Ewing, Kathleen Battle, David Rendall, James Morris, and Donald Gramm; James Levine. (Evenings at 8. Matinées Saturday, Jan. 30, at 1, and Saturday, Feb. 6, at 2.)

Bel Canto Opera—Henry Shek conducting performances of Puccini's "La Rondine," staged by Cynthia Edwards. (Robert F. Wagner Junior High School Auditorium, 220 E. 76th St. Saturdays, Jan. 30 and Feb. 6, at 7:30, and Sundays, Jan. 31 and Feb. 7, at 3. Tickets at the door on the days of the performances.)

ORCHESTRAS AND CHORUSES

New York Philharmonic—At Avery Fisher Hall, Erich Leinsdorf conducting—Friday and Saturday, Jan. 29-30, at 8, and Tuesday, Feb. 2, at 7:30: A Webern-Mozart-Brahms/Schoenberg program, with Claude Frank and Lilian Kallir, duo piano. . . . ¶ Thursday, Feb. 4, at 8; Friday, Feb. 5, at 2; and Saturday, Feb. 6, at 8: A Barber-Bruch-Beethoven program, with Glenn Dicterow, violin.

Brandenburg Ensemble—Alexander Schneider conducting a program of music by Haydn, Scarlatti, Handel, and Bach, with Frederica von Stade, mezzo-soprano. (Avery Fisher Hall. Sunday, Jan. 31, at 3.)

Kibbutz Chamber Orchestra of Israel—Noam Sheriff conducting a varied program, including his own work "Mai Ko Mashma Lan." With Emily Mitchell, harp. (Carnegie Hall. Wednesday, Feb. 3, at 8.)

Musica Sacra—Richard Westenburg conducting Schütz's "German Requiem," Stravinsky's "Mass," and Ives' "Psalm 90." With June Anderson and Catherine Aks, sopranos; Shirley Love, mezzo-soprano; Jon Humphrey, tenor; William Parker, baritone; and Kenneth Bell, bass. (Avery Fisher Hall. Wednesday, Jan. 27, at 8.)

Jupiter Symphony—Jens Nygaard conducting a program that will include the recently found Brahms orchestrations for two Schubert songs. With Michael Blum, piano, and Lee Schwartz, baritone. (Alice Tully Hall. Wednesday, Jan. 27, at 8.)

Brooklyn Philharmonia—Lukas Foss conducting, with Yehudi Menuhin and Edna Michell, violin. (Brooklyn Academy of Music, 30 Lafayette Ave. 636-4100. Friday and Saturday, Jan. 29-30, at 8, and Sunday, Jan. 31, at 3.)

American Composers Orchestra—The second in a series of three concerts of American Symphonic music, this one conducted by Paul Dunkel, with Rolf Schulte, violin. (Alice Tully Hall. Monday, Feb. 1, at 8.)

Clarion Concerts—Newell Jenkins conducting a program that includes the première of Richard Hundley's "The Sea Is Swimming Tonight." With Valery Klein-Whyte, soprano; Mimi Lerner, mezzo-soprano; Bruce Reed, tenor; Robert Briggs, bass; Stephen and Frieda Manes, piano; and Claire Brook, harmonium. (Alice Tully Hall. Wednesday, Feb. 3, at 8.)

Musica Aeterna Orchestra—Frederic Waldman conducting the last in a series of Haydn-Mozart programs, with Menahem Pressler, piano. (Grace Rainey Rogers Auditorium, Metropolitan Museum. Saturday, Feb. 6, at 8.)

Harmonic Choir—David Hykes directing an eight-member ensemble, which combines ancient and medieval chanting techniques with contemporary musical forms. (Alternative Museum, 17 White St., three blocks south of Canal St., at Sixth Ave. 966-4444. Saturday, Jan. 30, at 8.

Beethoven Society—An all-Beethoven program performed by Pamela Colburn, soprano; Tonio di Paolo, tenor; Arthur Woodley, bass; Francis Menotti, narrator; the Collegiate Chorale; and the Manhattan School of Music Symphony Orchestra, conducted by Robert Bass. (Alice Tully Hall. Sunday, Jan. 31, at 3.)

RECITALS

Andras Schiff—Piano, in a performance of Bach's Goldberg Variations. (Grace Rainey Rogers Auditorium, Metropolitan Museum. Thursday, Jan. 28, at 8.)

Veronica Jochum—Piano. (Kaufmann Concert Hall, 92nd Street Y. Thursday, Jan. 28, at 8.)

Monica St. Leger—Soprano. (Alice Tully Hall. Thursday, Jan. 28, at 8.)

Musical Elements—Daniel Asia and Robert Beaser conducting a chamber ensemble in a program of music by Luciano Berio, Martin Bresnick, Chevalier de Saint Georges, and others. With Gabriel Banat, violin, and Peter Tákacs, piano. (Merkin Concert Hall, Abraham Goodman House. Thursday, Jan. 28, at 8.)

Waverly Consort—A program of vocal and instrumental Italian music of the late Renaissance. (Grace Rainey Rogers Auditorium, Metropolitan Museum. Friday, Jan. 29, at 8.)

Composers' Forum—The first in a series of five programs, this one devoted to the works of Pauline Oliveros. (Paula Cooper Gallery, 155 Wooster St. Friday, Jan. 29, at 8. Tickets at the door on the night of the concert.)

Ned Rorem—A concert of music by Mr. Rorem performed by Katherine Ciesinski, mezzo-soprano, and Kristine Ciesinski and Susan Davenny Wyner, sopranos. Mr. Rorem will act as piano accompanist. (Kaufmann Concert Hall, 92nd Street Y. Saturday, Jan. 30, at 8.)

New York Renaissance Band—A program entitled "The Renaissance Band Expos'd," with

Andrew Schultze, bass-baritone. (Alice Tully Hall. Saturday, Jan. 30, at 8.)

The Bach Winterfest—The third in a series of four concerts, this one performed by Elaine Comparone, harpsichord; Louise Schulman, violin; Daniel Waitzman, flute; and Myron Lutzke, cello. (St. Joseph's Church, 371 Sixth Ave. Saturday, Jan. 30, at 8:30. For information about tickets, call 666-9427.)

Grace Bumbry and Shirley Verrett—Sopranos, in a program honoring Marian Anderson. With the American Symphony Orchestra, conducted by Eve Queler. (Carnegie Hall. Sunday, Jan. 31, at 3.)

Judith Raskin—Soprano. (Kaufmann Concert Hall, 92nd Street Y. Sunday, Jan. 31, at 3.)

Music Before 1800—The last in this season's series of concerts will be performed by Sarah Cunningham, Wendy Gillespie, and Mary Springfels, all viola da gamba. (Corpus Christi Church, 529 W. 121st St. Sunday, Jan. 31, at 3. Tickets at the door on the day of the concert.)

Gidon Kremer—Violin, with assisting artists. (Kaufmann Concert Hall, 92nd Street Y. Sunday, Jan. 31, at 8.)

Rebecca Penneys—Piano. (Alice Tully Hall. Sunday, Jan. 31, at 8.)

Curtis Macomber—Violin. (Alice Tully Hall. Tuesday, Feb. 2, at 8.)

Alice Artzt—Classical guitarist. (Merkin Concert Hall, Abraham Goodman House. Tuesday, Feb. 2, at 8.)

Cleveland Quartet—The first in a series of four all-Brahms programs, this one with Misha Dichter. (Kaufmann Concert Hall, 92nd Street Y. Tuesday, Feb. 2, at 8.)

Zaidee Parkinson and Curtis Rayam—Piano and tenor, with Alexandra Hunt, mezzo-soprano. (Merkin Concert Hall, Abraham Goodman House. Wednesday, Feb. 3, at 8.)

Artur Balsam—Piano. (Borden Auditorium, Manhattan School of Music, 120 Claremont Ave., at 122nd St. Wednesday, Feb. 3, at 8. No tickets necessary.)

American String Quartet—Chamber music. (Kaufmann Concert Hall, 92nd Street Y. Wednesday, Feb. 3, at 8.)

Eugene List—Piano, with assisting artists. (Kaufmann Concert Hall, 92nd Street Y. Thursday, Feb. 4, at 8.)

Marilyn Dubow and Allen Shawn—Violin and piano. (Christ and St. Stephen's Church, 120 W. 69th St. Thursday, Feb. 4, at 8. Admission by contribution.)

Eugenia Zukerman—Flute, with the Primavera String Quartet. Grace Rainey Rogers Auditorium, Metropolitan Museum. Thursday, Feb. 4, at 8.)

Martha Argerich—Piano, in a recital postponed from Jan. 24. (Avery Fisher Hall. Friday, Feb. 5, at 8.)

Emanuel Ax and Yo-Yo Ma—Piano and cello. (Grace Rainey Rogers Auditorium, Metropolitan Museum. Friday, Feb. 5, at 8.)

Rebecca La Brecque—Piano. (Carnegie Recital Hall. Friday, Feb. 5, at 8.)

Chamber Music Society of Lincoln Center—Beverly Hoch, soprano; Arthur Thompson, baritone; Alvin Brehm, contrabass; Carol Wincenc, flute; Gervase de Peyer, clarinet; Loren Glickman, bassoon; Charles Wadsworth, piano; and others. (Alice Tully Hall. Friday, Feb. 5, at 8, and Sunday, Feb. 7, at 5.)

Walter Hilse—Organ. (Alice Tully Hall. Saturday, Feb. 6, at 2:30.)

Nadja Salerno-Sonnenberg—Violin. (Alice Tully Hall. Saturday, Feb. 6, at 8.)

Katherine Ciesinski—Mezzo-soprano. (Kaufmann Concert Hall, 92nd Street Y. Saturday, Feb. 6, at 8.)

Ruth Glasser—Cello. (Merkin Concert Hall, Abraham Goodman House. Saturday, Feb. 6, at 8.)

Calliope: A Renaissance Band—A program of music entitled "From Burgundy to Barcelona: Music for Wind Band." (Christ Church United Methodist, Park Ave. at 60th St. Saturday, Feb. 6, at 8. For information about tickets, call 838-3036.)

SPORTS

Professional Basketball—At Byrne Meadowlands Arena (1-201 935-8888)—Sunday, Jan. 31, at 1: National Basketball Association All-Star game. . . . ¶ Wednesday, Feb. 3, at 7:35: Nets vs. Atlanta.

Hockey—At Nassau Coliseum—Saturday, Jan. 30: Islanders vs. Minnesota North Stars. . . . ¶ Tuesday, Feb. 2: Islanders vs. Washington Capitals. . . . ¶ Saturday, Feb. 6: Islanders vs. Detroit Red Wings. (Hempstead Turnpike, Uniondale, L.I. 1-516 794-9100. Games begin at 8:05.)

Racing—At **aqueduct:** Mondays and Wednesdays through Saturdays at 12:30, and Sundays at 1:05; through Monday, May 17. The Stymie Handicap, Saturday, Feb. 6. . . . **bowie,** Md.: Weekdays at 12:30; through Friday, March 12.

Trotting—At **yonkers raceway:** Weeknights at 8; through Saturday, April 3. . . . **meadowlands:** Weeknights at 8; through Saturday, Aug. 7.

ET ALIA

Prose Readings—Grace Paley and Donald Barthelme reading from their own fiction. (92nd Street Y, Lexington Ave. at 92nd St. 427-4410. Monday, Feb. 1, at 8.)

Winter Antiques Show—This year's event features an exhibit of American furniture and objects of art from the Winterthur Museum, in Wilmington. In addition, seventy-two dealers are displaying English, French, Italian, Oriental, and American pieces. A benefit for the East Side House Settlement. (7th Regiment Armory, Park Ave. at 66th St. Wednesday through Saturday, Jan. 27-30, from 11 to 9, and Sunday, Jan. 31, from 1 to 6.)

Auctions—At **sotheby's,** 980 Madison Ave., at 76th St. (Exhibition hours: Tuesdays through Saturdays, 9:30 to 5.) Thursday, Jan. 28, at 10:15 and 2: American nineteenth-century paintings and folk paintings, together with drawings and sculptures. . . . ¶ Friday, Jan. 29, at 10:15 and 2: American decorative and historical prints. . . . **sotheby's,** York Ave. at 72nd St. (Exhibition hours: Tuesdays through Saturdays, 9:30 to 5.) Wednesday, Jan. 27, at 2; Thursday, Jan. 28, at 10:15; and Friday and Saturday, Jan. 29-30, at 10:15 and 2: Americana, including furniture, folk art, silver, pewter, Chinese Export porcelains, metalwork, and decorations. . . . ¶ Thursday, Jan. 28, at 2: Lustreware, from the collection of Dr. and Mrs. Warren Baker. . . . **christie's,** Park Ave. at 59th St. (Exhibition hours: Tuesdays through Saturdays, 10 to 5.) Saturday, Jan. 30, at 10: English furniture. . . . **phillips,** 867 Madison Ave., at 72nd St. Thursday, Jan. 28, at 6: Oriental works of art. (Exhibition hours: Wednesday, Jan. 27, from 10 to 5.)

COMING EVENTS

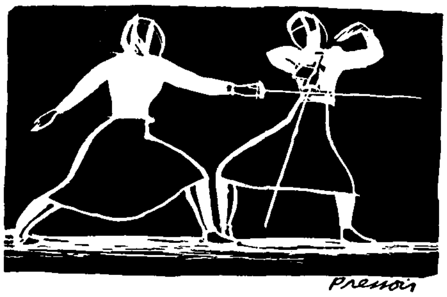
(A listing for forehanded readers.)

Professional Basketball—The Knicks at **madison square garden:** Feb. 11 (Golden State), Feb. 13 (Philadelphia), Feb. 16 (Dallas), Feb. 19 (Phoenix), Feb. 21 (Houston), Feb. 23 (Milwaukee), Feb. 27 (Portland), March 2 (San Diego), March 4 (Los Angeles), March 6 (Detroit), and March 9 (Utah). . . . ¶ The Nets at **byrne meadowlands arena:** Feb. 10 (Detroit), Feb. 12 (Golden State), Feb. 14 (Dallas), Feb. 17 (Chicago), Feb. 19 (Houston), Feb. 20 (Utah), Feb. 24 (Milwaukee), Feb. 26 (Portland), Feb. 28 (San Diego), March 3 (Los Angeles), and March 10 (Phoenix).

Dog Show—Westminster Kennel Club. (Madison Square Garden. Feb. 8-9.)

Gymnastics—The American Cup International Gymnastics Competition. (Madison Square Garden. March 6-7.)

Hockey—The Rangers at **madison square garden:** Feb. 14 (Quebec), Feb. 18 (Colorado), Feb. 21 (Montreal), Feb. 24 (Chicago), Feb. 28 (Pittsburgh), March 3 (Calgary), March 8 (Detroit), and March 10 (Philadelphia). . . . ¶ The Islanders at **nassau coliseum:** Feb. 13 (Philadelphia), Feb. 16 (Pittsburgh), Feb. 20 (Colorado), Feb. 23 (Chicago), Feb. 25 (Pittsburgh), Feb. 27 (Quebec), March 2 (Calgary), March 4 (Toronto), and March 6 (Rangers).



Track Meets—At Madison Square Garden: Millrose Games, Feb. 12. . . . ¶ U.S.A./Mobil Indoor Track and Field Championships Grand Prix Finals, Feb. 26.

Music—**metropolitan opera house** (580-9830): The season continues through April 17. . . . **new york city opera,** New York State Theatre (870-5570): The spring season will open on Feb. 24, with the American première of Wagner's "Die Feen," and will run through May 2. . . . **avery fisher hall** (874-2424): The New York Philharmonic season continues through May 12. . . . ¶ Itzhak Perlman, violin, with the New York Philharmonic, Feb. 10. . . . ¶ Virtuosi di Roma, Feb. 14. . . . ¶ Philadelphia Orchestra, Feb. 17. . . . ¶ Y Chamber Symphony, Feb. 19. . . . ¶ Yehudi Menuhin, violin, Feb. 21. . . . ¶ American Philharmonic Orchestra, Feb. 22. . . . ¶ Itzhak Perlman, violin; Vladimir Ashkenazy, piano; and Lynn Harrell, cello, Feb. 24. . . . ¶ St. Paul Chamber Orchestra, Feb. 28. . . . ¶ Jean-Pierre Rampal, flute, Feb. 28. . . . ¶ Opera Orchestra of New York, March 3. . . . ¶ Maurizio Pollini, piano, March 5. . . . **carnegie hall** (247-7459): American Symphony Orchestra, Feb. 7 and March 7. . . . ¶ Orchestre de Paris, Feb. 8, 15, 17, 18, and 19. . . . ¶ Philadelphia Orchestra, Feb. 9. . . . ¶ Boston Symphony, Feb. 10-11. . . . ¶ Boston Pops, Feb. 12. . . . ¶ King's Singers, Feb. 21. . . . ¶ Cincinnati Symphony, Feb. 22. . . . ¶ Music from Japan, Feb. 24. . . . ¶ Alfred Brendel, piano, Feb. 25. . . . ¶ New York Choral Society, Feb. 27. . . . ¶ Bella Davidovich, piano, Feb. 28. . . . ¶ St. Paul Chamber Orchestra, March 3. . . . ¶ Nathaniel Rosen, cello, March 4. . . . **alice tully hall** (362-1911): Guarneri Quartet, Feb. 10-11. . . . ¶ Ensemble for Early Music, Feb. 13. . . . ¶ Chamber Music Society of Lincoln Center, Feb. 14-16. . . . ¶ Richard Goode, piano, Feb. 17. . . . ¶ Yo-Yo Ma, cello, Feb. 21. . . . ¶ Jan Opalach, bass-baritone, Feb. 22. . . . ¶ Music from Marlboro, Feb. 23. . . . ¶ Music from Ravinia, Feb. 24. . . . ¶ Speculum Musicae, Feb. 25. . . . ¶ Frederica von Stade, mezzo-soprano, Feb. 28. . . . ¶ Clarion Concert, March 3. . . . ¶ Waverly Consort, March 4 and 6. . . . ¶ Judith Blegen, soprano, March 5. . . . **kaufmann concert hall,** 92nd Street Y (427-4410): Stephanie Chase, violin, Feb. 10. . . . ¶ Y Chamber Symphony, Feb. 20-21. . . . ¶ Christiane Edinger, violin, and Ilana Vered, piano, Feb. 23. . . . ¶ Edmund Battersby, piano, Feb. 24. . . . ¶ Joseph Fuchs, violin, Feb. 28. . . . **grace rainey rogers auditorium,** Metropolitan Museum (570-3949): Musica Sacra, Feb. 8. . . . ¶ Ursula Oppens, piano, Feb. 11. . . . ¶ Music from Marlboro, Feb. 18. . . . ¶ Guarneri Quartet, Feb. 19. . . . ¶ Musica Aeterna Orchestra, Feb. 20 and March 6-7. . . . ¶ Jupiter Symphony Chamber Players, Feb. 26.

Theatre—Some productions scheduled to open during the next several weeks: "Special Occasions," a new two-character play by Bernard Slade, with Suzanne Pleshette and Richard Mulligan as a divorced couple. . . . ¶ "Come Back to the 5 & Dime Jimmy Dean, Jimmy Dean," a play by Ed Graczyk, with a cast headed by Sandy Dennis, Cher, and Karen Black. It was seen Off Off Broadway two years ago. . . . ¶ Jean Stapleton and Pat Hingle will star in a revival of "The Late Christopher Bean," Sidney Howard's 1932 adaptation of a French play. . . . ¶ Donny Osmond will have the title role in a revival of the 1904 George M. Cohan musical, "Little Johnny Jones."

Other Dates—Lincoln's Birthday is Friday, Feb. 12. . . . ¶ Spring Flower Show of the New York Botanical Garden, Bronx Park, opens Feb. 12. . . . ¶ National Antiques Show, at Madison Square Garden Exposition Rotunda, Feb. 13-21. . . . ¶ Washington's Birthday will be observed on Monday, Feb. 15. . . . ¶ Ash Wednesday falls on Feb. 24. . . . ¶ Empire Cat Club Show, at Madison Square Garden Center Exposition Rotunda, Feb. 27-28. . . . ¶ Spring Flower Show, at the Horticultural Society of New York, 128 W. 58th St., March 6-7.

GOINGS ON ABOUT TOWN

THE MOVIE HOUSES

EAST SIDE

Little Theatre, Public Theatre, 425 Lafayette St. (598-7171; theatre opens in the late afternoon and is closed Mondays.)
"Careless" (1962; directed by Mauro Bolognini; in Italian), with Claudia Cardinale, Anthony Franciosa, Betsy Blair, and Philippe Leroy.

Art, 36 E. 8th. (473-7014)
"Chariots of Fire" (†).

St. Marks Cinema, 2nd Ave. at 8th. (533-9292)
Through Jan. 28: "Gallipoli" (Peter Weir; an Australian film), with Mel Gibson; and "Days of Heaven" (†).
From Jan. 29: To be announced.

Gramercy, Lexington at 23rd. (475-1660)
"Atlantic City" (†).

Bay Cinema, 2nd Ave. at 32nd. (679-0160)
"Reds" (†).

Murray Hill, 160 E. 34th. (685-7652)
Through Jan. 28: "Zoot Suit" (Luis Valdez), with Edward James Olmos and Charles Aidman.
From Jan. 29: "The Border" (†).

Loews 34th Street Showplace, 238 E. 34th. (532-5544)
Theatre 1: Through Jan. 28: "Taps" (Harold Becker), with George C. Scott and Timothy Hutton. From Jan. 29: "Four Friends" (†).
Theatre 2: "Absence of Malice" (†).
Theatre 3: "On Golden Pond" (†).

34th St. East, 241 E. 34th. (683-0255)
"Ragtime" (†).

Eastside Cinema, 3rd Ave. at 55th. (755-3020)
"Ticket to Heaven" (†).

Sutton, 3rd Ave. at 57th. (759-1411)
Through Feb. 4: "The Last Waltz" (†).
From Feb. 5: "Personal Best" (Robert Towne), with Mariel Hemingway and Scott Glenn.

Gotham Cinema, 3rd Ave. at 58th. (759-2262)
"Taps" (Harold Becker), with George C. Scott and Timothy Hutton.

Plaza, 42 E. 58th. (355-3320)
Through Feb. 4: "Atlantic City" (†).
From Feb. 5: "Butterfly" (Matt Cimber), with Stacy Keach and Orson Welles.

Manhattan 1 and 2, 3rd Ave. at 59th. (935-6420)
Theatre 1: "Whose Life Is It Anyway?" (John Badham), with Richard Dreyfuss.
Theatre 2: "Chariots of Fire" (†).

Baronet and Coronet, 3rd Ave. at 59th. (355-1663)
Theatre 1: "Ragtime" (†).
Theatre 2: "Reds" (†).

D. W. Griffith, 235 E. 59th. (759-4630)
"Gallipoli" (Peter Weir; an Australian film), with Mel Gibson.

Cinema I and II, 3rd Ave. at 60th. (753-6022/0774)
Theatre 1: "Shoot the Moon" (†).
Theatre 2: "On Golden Pond" (†).

Gemini 1 and 2, 2nd Ave. at 64th. (832-1670)
Theatre 1: Through Jan. 28: "The Boogens" (James L. Conway), with Rebecca Balding. From Jan. 29: "The Border" (†).
Theatre 2: " A Stranger Is Watching" (Sean Cunningham), with Kate Mulgrew and Rip Torn.

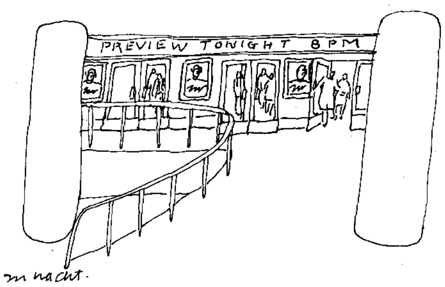
Beekman, 2nd Ave. at 66th. (737-2622)
Through Jan. 28: "Zoot Suit" (Luis Valdez), with Edward James Olmos and Charles Aidman.
From Jan. 29: "Heartland" (†).

Loews New York 1 and 2, 2nd Ave. at 67th. (744-7339)
Theatre 1: Through Jan. 28: "The French Lieutenant's Woman" (†). From Jan. 29: "Four Friends" (†).
Theatre 2: "Vice Squad" (Gary A. Sherman), with Season Hubley and Gary Swanson.

68th St. Playhouse, 3rd Ave. at 68th. (734-0302)
"Man of Iron" (Andrzej Wajda; in Polish).

Loews Tower East, 3rd Ave. at 71st. (879-1313)
"Absence of Malice" (†).

72nd Street East, 1st Ave. at 72nd. (288-9304; Mondays through Thursdays, theatre opens in the late afternoon.)
Through Jan. 28: "Rollover" (Alan J. Pakula), with Jane Fonda and Kris Kristofferson.
From Jan. 29: To be announced.



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			27	28	29	30
31	1	2	3	4	5	6

FILMS ACCOMPANIED BY A DAGGER ARE DESCRIBED IN THE "IN BRIEF" SECTION, STARTING ON PAGE 23.

U. A. East, 1st Ave. at 85th. (249-5100)
Through Jan. 28: "The Boogens" (James L. Conway), with Rebecca Balding.
From Jan. 29: "The Border" (†).

Loews Orpheum 1 and 2, 3rd Ave. at 86th. (289-4607)
Theatre 1: "Sharky's Machine" (Burt Reynolds), with Reynolds.
Theatre 2: "Vice Squad" (Gary A. Sherman), with Season Hubley and Gary Swanson.

86th St. East, 3rd Ave. at 86th. (249-1144)
"A Stranger Is Watching" (Sean Cunningham), with Kate Mulgrew and Rip Torn.

R.K.O. Century 86th St. 1 and 2, Lexington at 86th. (289-8900)
Theatre 1: "On Golden Pond" (†).
Theatre 2: Through Jan. 28: "Zoot Suit" (Luis Valdez), with Edward James Olmos and Charles Aidman. From Jan. 29: To be announced.

WEST SIDE

Film Forum 1 and 2, 57 Watts St. (431-1590; Mondays through Fridays, theatre opens in the late afternoon.)
Theatre 1: Through Feb. 2: "The Alien's Place" (1979; directed by Rudolf van den Berg; in Dutch). From Feb. 3: "John Heartfield, Photomontagist" (1977; Helmut Herbst; in German), a documentary; and "A Good Example" (1979; Bertrand Sauzier), with David Rothauser.
Theatre 2: Through Feb. 2: "Gates of Heaven" (1978) and "Vernon, Florida," both documentary films, directed by Errol Morris. From Feb. 3: To be announced.

Waverly 1 and 2, 6th Ave. at 3rd. (929-8037)
Theatre 1: "Absence of Malice" (†).
Theatre 2: "Montenegro" (Dusan Makavejev), with Susan Anspach and Erland Josephson.

Greenwich Playhouse 1 and 2, Greenwich Ave. at 12th. (929-3350)
Theatre 1: "Whose Life Is It Anyway?" (John Badham), with Richard Dreyfuss.
Theatre 2: Through Jan. 28: "Ticket to Heaven" (†). From Jan. 29 (tentative): "Four Friends" (†).

Quad Cinema, 34 W. 13th. (255-8800)
Theatre 1: "On Golden Pond" (†).
Theatre 2: Through Jan. 28: "Blood Wedding" (Carlos Saura; in Spanish), with Antonio Gades. From Jan. 29 (tentative): "Four Friends" (†).
Theatre 3: Through Jan. 28: "Prince of the City" (†). From Jan. 29 (tentative): "Pixote" (†).
Theatre 4: "On Golden Pond" (†).

Guild, 33 W. 50th. (757-2406)
Through Feb. 4: "Cinderella" (1950), a full-length Walt Disney animated film.
From Feb. 5: "Night Crossing" (Delbert Mann), with John Hurt and Jane Alexander.

Ziegfeld, 141 W. 54th. (765-7600)
"Pennies from Heaven" (†).

Festival, 6 W. 57th. (757-2715)
Through Jan. 28: "Montenegro" (Dusan Makavejev), with Susan Anspach and Erland Josephson.
From Jan. 29: To be announced.

57th St. Playhouse, 110 W. 57th. (581-7360)
"Raiders of the Lost Ark" (†).

Little Carnegie, 146 W. 57th. (246-5123)
Through Jan. 28: "Four Friends" (†).
From Jan. 29: To be announced.

Paris, 4 W. 58th. (688-2013)
"The Woman Next Door" (François Truffaut; in French), with Gérard Depardieu and Fanny Ardant.

Cinema 3, 2 W. 59th. (752-5959)
Through Jan. 30: "Over the Edge" (1979; Jonathan Kaplan), with Matt Dillon.
From Jan. 31: "Sisters, or the Balance of Happiness" (Margarethe von Trotta; in German), with Jutte Lampe and Gudrun Gabriel.

Loews Paramount, B'way at 61st. (247-5070)
"Absence of Malice" (†).

Lincoln Plaza 1, 2, and 3, B'way at 63rd. (757-2280)
Theatre 1: "Chariots of Fire" (†).
Theatre 2: "My Dinner with André" (†).
Theatre 3: "David" (Peter Lilienthal; in German).

Cinema Studio 1 and 2, B'way at 66th. (877-4040)
Theatre 1: Through Feb. 4: "Pixote" (†). From Feb. 5: "The Woman Next Door" (François Truffaut; in French), with Gérard Depardieu and Fanny Ardant.
Theatre 2: "Taxi Zum Klo" (Frank Ripploh; in German).

Embassy 72nd St. 1 and 2, B'way at 72nd. (724-6745)
Theatre 1: "Stevie" (1978; Robert Enders), with Glenda Jackson, Mona Washbourne, and Trevor Howard.
Theatre 2: "Ticket to Heaven" (†).

Loews 83rd Quad, B'way at 83rd. (877-3190)
Theatre 1: Through Feb. 4: "Neighbors" (John G. Avildsen), with John Belushi and Dan Aykroyd. From Feb. 5: To be announced.
Theatre 2: Through Feb. 4: "Whose Life Is It Anyway?" (John Badham), with Richard Dreyfuss. From Feb. 5: To be announced.
Theatre 3: Through Feb. 4: "Saturday the 14th" (Howard R. Cohen), with Richard Benjamin and Paula Prentiss. From Feb. 5: To be announced.
Theatre 4: Through Feb. 4: "Sharky's Machine" (Burt Reynolds), with Reynolds. From Feb. 5: To be announced.

New Yorker 1 and 2, B'way at 88th. (580-7900)
Theatre 1: "On Golden Pond" (†).
Theatre 2: Through Jan. 28: "Montenegro" (Dusan Makavejev), with Susan Anspach and Erland Josephson. From Jan. 29: To be announced.

Olympia Quad, B'way at 107th. (865-8128)
Theatre 1: See listings under Revival Houses.
Theatre 2: Through Jan. 28: "Zoot Suit" (Luis Valdez), with Edward James Olmos and Charles Aidman. From Jan. 29: "Ghost Story" (John Irvin), with Fred Astaire and Melvyn Douglas; and "An American Werewolf in London" (John Landis), with David Naughton and Jenny Agutter.
Theatre 3: Through Feb. 4: "Ticket to Heaven" (†). From Feb. 5: "Dressed to Kill" (†) and "Blow Out" (†).
Theatre 4: "Atlantic City" (†).

TIMES SQUARE AREA

Criterion Theatres, B'way at 44th. (582-1795)
Theatre 1: "Taps" (directed by Harold Becker), with George C. Scott and Timothy Hutton.
Theatre 2: Through Jan. 28: "Zoot Suit" (Luis Valdez), with Edward James Olmos and Charles Aidman. From Jan. 29: "Chariots of Fire" (†).
Theatre 3: "Montenegro" (Dusan Makavejev), with Susan Anspach and Erland Josephson.
Theatre 4: "Whose Life Is It Anyway?" (John Badham), with Richard Dreyfuss.
Theatre 5: Through Jan. 28: "Sharky's Machine" (Burt Reynolds), with Reynolds. From Jan. 29: "Modern Problems" (Ken Shapiro), with Chevy Chase.
Theatre 6: "Arthur" (†).

Embassy 1, B'way at 46th. (757-2408)
Through Feb. 4: "Raiders of the Lost Ark" (†).
From Feb. 5: "Night Crossing" (Delbert Mann), with John Hurt and Jane Alexander.

Embassy 2, 3, and 4, B'way at 47th. (730-7262)
Theatre 2: Through Jan. 28: "Neighbors" (John G. Avildsen), with John Belushi and Dan Aykroyd. Jan. 29-Feb. 4: "Four Friends" (†). From Feb. 5: "Raiders of the Lost Ark" (†).
Theatre 3: Through Feb. 4: "Revenge of the Shogun Women" (Tsang Mei-Chun), with Shiusen Leong and Shirley Han. In 3-D. From Feb. 5: "Four Friends" (†).
Theatre 4: "Atlantic City" (†).

Loews Astor Plaza, B'way at 44th. (869-8340)
"Reds" (†).

Loews State 1 and 2, B'way at 45th. (582-5060)
Theatre 1: "Vice Squad" (Gary A. Sherman), with Season Hubley and Gary Swanson.
Theatre 2: "Ragtime" (†).

Movieland, B'way at 47th. (757-8320)
Through Jan. 28: "Modern Problems" (Ken Shapiro), with Chevy Chase.
From Jan. 29: "Sharky's Machine" (Burt Reynolds), with Reynolds.

Rivoli 1 and 2, B'way at 49th. (247-1633)
Theatre 1: Through Jan. 28: "The Boogens" (James L. Conway), with Rebecca Balding. From Jan. 29: "The Border" (†).
Theatre 2: "On Golden Pond" (†).

R.K.O. Century Cinerama 1 and 2, B'way at 47th. (975-8366/8369)
Theatre 1: "A Stranger Is Watching" (Sean Cunningham), with Kate Mulgrew and Rip Torn.
Theatre 2: Through Jan. 28: "Saturday the 14th" (Howard R. Cohen), with Richard Benjamin and Paula Prentiss. From Jan. 29: To be announced.

REVIVAL HOUSES

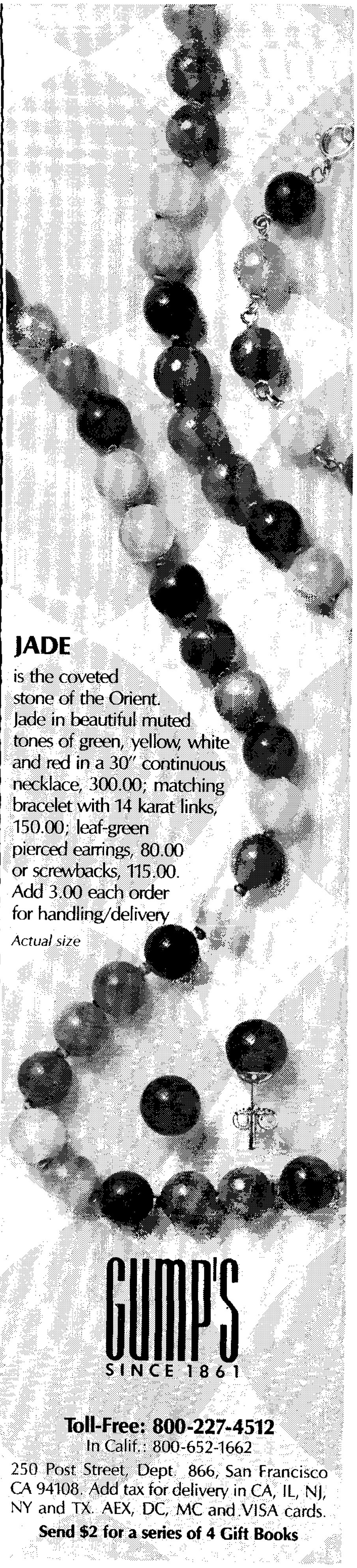
Bleecker St. Cinema, 144 Bleecker St. (674-2560)
Jan. 27: "Emmanuelle" (1974; directed by Just Jaeckin; in French), with Sylvia Kristel and Alain Cuny; and "Wifemistress" (1979; Marco Vicario; in Italian), with Marcello Mastroianni and Laura Antonelli.
Jan. 28: "Despair" (1979; Rainer Werner Fassbinder), with Dirk Bogarde and Andréa Ferréol; and "The Man in the Glass Booth" (1975; Arthur Hiller), with Maximilian Schell, Lois Nettleton, Lawrence Pressman, and Luther Adler.
Jan. 29-30: "Mean Streets" (1973; Martin Scorsese), with Robert De Niro and Harvey Keitel; and "Midnight Cowboy" (1969; John Schlesinger), with Dustin Hoffman and Jon Voight.
Jan. 31: "That Obscure Object of Desire" (1977; Luis Buñuel; in French), with Fernando Rey, Carole Bouquet, and Angela Molina; and "The Discreet Charm of the Bourgeoisie" (1972; Luis Buñuel; in French), with Fernando Rey, Stéphane Audran, Delphine Seyrig, and Jean-Pierre Cassel.
Feb. 1: "Klute" (1971; Alan J. Pakula), with Jane Fonda and Donald Sutherland; and "Street of Shame" (†).
Feb. 2: "The Lower Depths" (1957; Akira Kurosawa; in Japanese), with Toshiro Mifune; and "Sandakan 8" (†).
Feb. 3: "Kanal" (1956; Andrzej Wajda; in Polish); and "Ashes and Diamonds" (1958; Andrzej Wajda; in Polish), with Zbigniew Cybulski.
Feb. 4: "Only Angels Have Wings" (1939; Howard Hawks), with Jean Arthur and Cary Grant; and "Stagecoach" (†).
Feb. 5-6: "Breathless" (1959; Jean-Luc Godard; in French), with Jean Seberg and Jean-Paul Belmondo; and "Alphaville" (†).

Carnegie Hall Cinema, 7th Ave. at 57th. (757-2131)
Through Jan. 28: "Café Express" (1981; Nanni Loy; in Italian), with Nino Manfredi; and "Down and Dirty" (1976; Ettore Scola; in Italian), with Nino Manfredi.
Jan. 29-30: "Women in Love" (1970; Ken Russell), with Glenda Jackson, Alan Bates, and Oliver Reed; and "The Boy Friend" (1971; Ken Russell), with Twiggy and Christopher Gable.
Jan. 31-Feb. 2: "1900" (1977; Bernardo Bertolucci), with Robert De Niro, Burt Lancaster, Donald Sutherland, Dominique Sanda, Sterling Hayden, and Gérard Depardieu.
Feb. 3-6: "Mommie Dearest" (1981; Frank Perry), with Faye Dunaway, Diana Scarwid, Steve Forrest, and Jocelyn Brando; and "Sunset Boulevard" (1950; Billy Wilder), with Gloria Swanson, William Holden, and Erich von Stroheim.

Cinema Village, 22 E. 12th. (924-3363)
Through Jan. 28: "S.O.B." (1981; Blake Edwards), with Julie Andrews, William Holden, Robert Preston, and Richard Mulligan; and "Sunset Boulevard" (1950; Billy Wilder), with Gloria Swanson, William Holden, and Erich von Stroheim.
Jan. 29-30: "Amarcord" (1974; Federico Fellini; in Italian), with Bruno Zanin; and "The Clowns" (1971; Federico Fellini; in Italian).
Jan. 31-Feb. 2: "The Damned" (1969; Luchino Visconti), with Dirk Bogarde, Helmut Berger, Charlotte Rampling, and Ingrid Thulin (X-rated); and "Death in Venice" (1971; Luchino Visconti), with Dirk Bogarde and Bjorn Andresen.
Feb. 3-4: "Man with Bogart's Face" ("Sam Marlow, Private Eye;" 1980; Robert Day), with Robert Sacchi, Franco Nero, and Michelle Phillips; and "The Stunt Man" (1980; Richard Rush), with Peter O'Toole, Steve Railsback, and Barbara Hershey.
Feb. 5-6: "The Seventh Seal" (1956; Ingmar Bergman; in Swedish), with Max von Sydow, Gunnar Björnstrand, and Bibi Andersson; and "Wild Strawberries" (1957; Ingmar Bergman; in Swedish), with Victor Sjöström and Ingrid Thulin.

8th St. Playhouse, 52 W. 8th. (674-6515; Mondays through Fridays, theatre opens in the late afternoon.)
Through Jan. 28: "Chinatown" (1974; Roman Polanski), with Jack Nicholson, Faye Dunaway, and John Huston; and "The Maltese Falcon" (1941; John Huston), with Humphrey Bogart, Mary Astor, Sydney Greenstreet, Elisha Cook, Jr., and Peter Lorre.
Jan. 29-30: "The Song Remains the Same" (1976; Peter Clifton and Joe Massot), with the Led Zeppelin rock group, onstage and off; and "The Kids Are Alright" (1979; Jeff Stein), with The Who.
Jan. 31-Feb. 1: "Cabaret" (1972; Bob Fosse), with Liza Minnelli, Michael York, and Joel Grey; and "All About Eve" (1950; Joseph L. Mankiewicz), with Bette Davis, Anne Baxter, George Sanders, Gary Merrill, Hugh Marlowe, Celeste Holm, and Thelma Ritter.
Feb. 2: "The Godfather, Part II" (†).
Feb. 3-4: "Juliet of the Spirits" (1965; Federico Fellini; in Italian), with Giulietta Masina; and "Beauty and the Beast" (1946; Jean Cocteau; in French), with Jean Marais, Josette Day, Marcel André, and Michel Auclair.
Feb. 5-6: "Casablanca" (1942; Michael Curtiz), with Humphrey Bogart, Ingrid Bergman, and Claude Rains; and "On the Waterfront" (1954; Elia Kazan), with Marlon Brando, Lee J. Cobb, Eva Marie Saint, Karl Malden, and Rod Steiger.

Hollywood Twin Cinema 1, 8th Ave. at 47th. (246-0717)
Jan. 27: "Separate Tables" (1958; Delbert Mann), with Rita Hayworth, Deborah Kerr, David Niven, Burt Lancaster, and Wendy Hiller; and "Witness for the Prosecution" (1958; Billy Wilder), with Tyrone Power, Marlene Dietrich, Charles Laughton, Elsa Lanchester, and Una O'Connor.
Jan. 28-29: "The Sun Also Rises" (1957; Henry King), with Tyrone Power, Ava Gardner, Errol Flynn, Mel Ferrer, and Eddie Albert; and "Mister Roberts" (1955; Mervyn LeRoy and John Ford), with Henry Fonda, James Cagney, William Powell, and Jack Lemmon.
Jan. 30-31: "Lust for Life" (1956; Vincente Minnelli), with Kirk Douglas and Anthony Quinn; and "Mogambo" (1953; John Ford), with Clark Gable, Ava Gardner, and Grace Kelly.
Feb. 1-3: "The Subject Was Roses" (1968; Ulu Grosbard), with Patricia Neal, Jack Albertson, and Martin Sheen; and "Take the Money and Run" (1969; Woody Allen), with Allen and Janet Margolin.
Feb. 4-5: "Twentieth Century" (1934; Howard Hawks), with John Barrymore, Carole Lombard, and Ralph Forbes; and "The Stranger" (1946; Orson Welles), with Welles, Edward G. Robinson, and Loretta Young.
From Feb. 6: "Born Yesterday" (1950; George Cukor), with Judy Holliday, Wil-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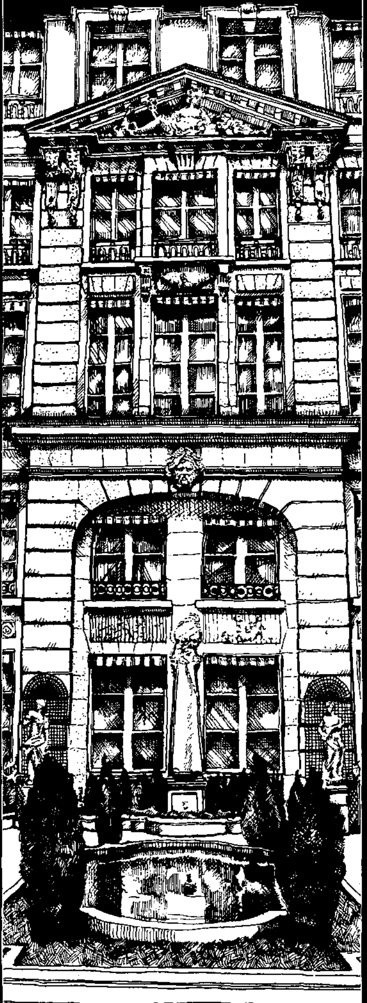

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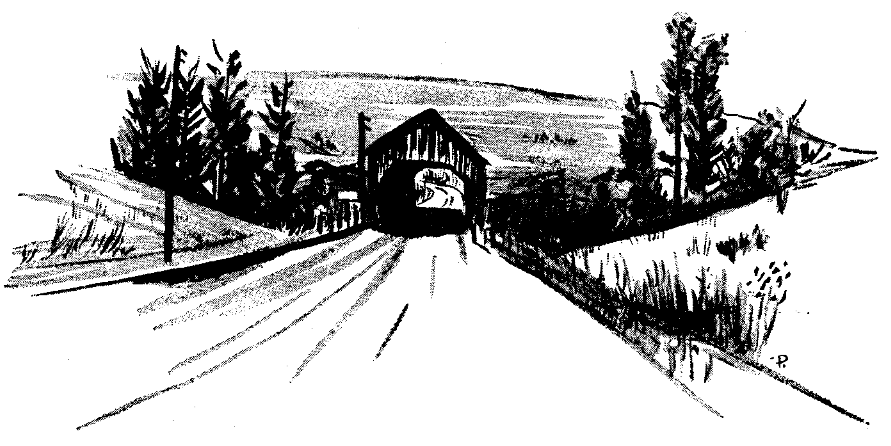
Hollywood Twin Cinema 2, 8th Ave. at 47th. (246-0717)
Jan. 27: "Taxi Driver" (1976; Martin Scorsese), with Robert De Niro, Harvey Keitel, Cybill Shepherd, and Jodie Foster; and "Straw Dogs" (1972; Sam Peckinpah), with Dustin Hoffman and Susan George.
Jan. 28-29: "Revenge of the Pink Panther" (1978; Blake Edwards), with Peter Sellers and Herbert Lom; and "The Last Detail" (†).
Jan. 30-31: "The Deer Hunter" (1978; Michael Cimino), with Robert De Niro, Christopher Walken, Meryl Streep, John Savage, and John Cazale.
Feb. 1-3: "Irma la Douce" (†) and "Animal House" (†).
Feb. 4-5: "For Your Eyes Only" (†) and "The Amityville Horror" (†).
From Feb. 6: "Dr. No" (†) and "From Russia with Love" (†).

Olympia Quad I, B'way at 107th. (865-8128)
Through Jan. 28: "The Boogens" (1982; James L. Conway), with Rebecca Balding.
Jan. 29-30: "Yojimbo" (1961) and "Throne of Blood" (1957), both films in Japanese, directed by Akira Kurosawa, with Toshiro Mifune.
Jan. 31-Feb. 2: "The Drunken Angel" (1948; Akira Kurosawa; in Japanese), with Takashi Shimura; and "Scandal" (1950; Akira Kurosawa; in Japanese), with Toshiro Mifune, Yoshiko Yamaguchi, and Takashi Shimura.
Feb. 3-4: "Simon of the Desert" (1965; Luis Buñuel; in Spanish), with Claudio Brook and Silvia Pinal; "El" ("This Strange Passion;" 1952; Luis Buñuel; in Spanish), with Arturo de Cordova, Delia Garcés, and Luis Beristain; and "The Exterminating Angel" (†).
Feb. 5-6: "The Bicycle Thief" (1949; Vittorio De Sica; in Italian); and "The Big Deal on Madonna Street" (1958; Mario Monicelli; in Italian), with Vittorio Gassman, Marcello Mastroianni, Totò, and Claudia Cardinale.

Regency, B'way at 67th. (724-3700)
Jan. 27: "The Story of Adèle H." (1975; François Truffaut; in French), with Isabelle Adjani; and "My Life to Live" (1962; Jean-Luc Godard; in French), with Anna Karina.
Jan. 28-30: "The African Queen" (1951; John Huston), with Humphrey Bogart and Katharine Hepburn; and "The Nun's Story" (1959; Fred Zinnemann), with Audrey Hepburn, Peter Finch, Dean Jagger, and Mildred Dunnock.
Jan. 31-Feb. 1: "Mrs. Miniver" (†); and "Cry Havoc" (1943; Richard Thorpe), with Margaret Sullavan, Ann Sothern, and Joan Blondell.
Feb. 2-3: "Major Barbara" (†) and "Caesar and Cleopatra" (†).
Feb. 4-6: "Anna Karenina" (†) and "Queen Christina" (†).

Thalia, B'way at 95th. (222-3370)
Jan. 27: "A Woman of Affairs" (1928; Clarence Brown; a silent film), with Greta Garbo, John Gilbert, Lewis Stone, and Johnny Mack Brown; and "Flesh and the Devil" (1927; Clarence Brown; a silent film), with Greta Garbo, John Gilbert, and Lars Hanson.
Jan. 28: "The Stranger" (1946; Orson Welles), with Welles, Edward G. Robinson, and Loretta Young; and "Chimes at Midnight" ("Falstaff;" 1967; Orson Welles), with Welles, Jeanne Moreau, John Gielgud, Keith Baxter, and Margaret Rutherford.
Jan. 29-30: "The Pacifist" (1971; Miklós Jancsó; in Italian), with Monica Vitti; and "Winter Wind" (1970; Miklós Jancsó; in French), with Jacques Charrier.
Jan. 31: "Sanjuro" (†); and "The Hidden Fortress" (1958; Akira Kurosawa; in Japanese), with Toshiro Mifune.
Feb. 1: "Two for the Road" (1967; Stanley Donen), with Audrey Hepburn and Albert Finney; and "Breakfast at Tiffany's" (1961; Blake Edwards), with Audrey Hepburn, George Peppard, Patricia Neal, and Mickey Rooney.
Feb. 2: "The Magic Christian" (†); and "Stand Easy" (1952), with Peter Sellers, Spike Milligan, and Harry Secombe.
Feb. 3: "Pandora's Box" (1929; G. W. Pabst; a German silent film), with Louise Brooks; and "Sunrise" (†).
Feb. 4: "Five Easy Pieces" (1970; Bob Rafelson), with Jack Nicholson; and "The Last Detail" (†).
Feb. 5-6: "Who Shot the Teacher?" (1979; Silvio Narrizano; a Canadian film), with Bud Cort and Samantha Eggar; and "Harold and Maude" (1971; Hal Ashby), with Ruth Gordon and Bud Cort.

Theatre 80 St. Marks, 80 St. Marks Pl. (254-7400)
Jan. 27: "Nicholas Nickleby" (1947; Alberto Cavalcanti), with Cedric Hardwicke, Derek Bond, and Bernard Miles; and "Great Expectations" (1946; David Lean), with Valerie Hobson, John Mills, Jean Simmons, Alec Guinness, and Francis L. Sullivan.
Jan. 28: "The Misfits" (1961; John Huston), with Clark Gable, Marilyn Monroe, and Montgomery Clift; and "River of No Return" (1954; Otto Preminger), with Robert Mitchum and Marilyn Monroe.
Jan. 29-30: "Murder" (1930; Alfred Hitchcock), with Herbert Marshall, Norah Baring, and Miles Mander; and "Young and Innocent" ("The Girl Was Young;" 1937; Alfred Hitchcock), with Derrick de Marney, Nova Pilbeam, Basil Radford, Percy Marmont, and Mary Clare.
Jan. 31: "The Prince and the Showgirl" (†) and "Don't Bother to Knock" (†).
Feb. 1: "Red Dust" (1932; Victor Fleming), with Clark Gable, Jean Harlow, and Mary Astor; and "Bombshell" (†).
Feb. 2: "Mr. Skeffington" (1944; Vincent Sherman), with Bette Davis and Claude Rains; and "Old Acquaintance" (1943; Vincent Sherman), with Bette Davis, Miriam Hopkins, Gig Young, John Loder, and Dolores Moran.
Feb. 3: "Diabolique" (1955; Henri-Georges Clouzot; in French), with Simone Signoret, Vera Clouzot and Paul Meurisse; and "Panique" (†).
Feb. 4: "Dangerous" (1936; Alfred E. Green), with Bette Davis and Franchot Tone; and "Front Page Woman" (1935; Michael Curtiz), with Bette Davis, George Brent, and Roscoe Karns.



Feb. 5-6: "Nothing Sacred" (†); and "My Man Godfrey" (1936; Gregory La Cava), with Carole Lombard, William Powell, Alice Brady, and Mischa Auer.

FILM LIBRARIES, ETC.

Whitney Museum, Madison Ave. at 75th St.—"Discord" (1981; directed by Bill Lundberg), a film installation. Continuous showings from noon to 6 (Tuesday evenings until 8). Call desk (288-9601) for ticket information. Closed Mondays.

Anthology Film Archives, 80 Wooster St. (226-0010)—Jan. 27 at 8: "La Règle du Jeu" (1939; Jean Renoir; in French, no English subtitles). . . . ¶ Jan. 28 at 8: "Francesco, Giullare di Dio" (1950; Roberto Rossellini; in Italian, no English subtitles). . . . ¶ Jan. 29 at 8: Films by the Lumière brothers; and "Carriage Trade" (1972; Warren Sonbert). . . . ¶ Jan. 30 at 2: A video program by Ernie Gusella. . . . ¶ Jan. 30 at 8: "Rapt" (1934; Dimitri Kirsanoff; in French, no English subtitles). . . . ¶ Jan. 31 at 8: A program of Laurel and Hardy films. . . . ¶ Feb. 2 at 8: Three silent films by Hans Richter and four silent films by Man Ray. . . . ¶ Feb. 3 at 8: "Mat" ("Mother;" 1926; Vsevolod Pudovkin; a Russian silent film, no English titles). . . . ¶ Feb. 4 at 8: "Triumph of the Will" (1936; Leni Riefenstahl), a documentary. . . . ¶ Feb. 5 at 8: "Olympia" (1939; Leni Riefenstahl), a documentary. . . . ¶ Feb. 6 at 2: A video program by Howard Fried and Paul Koss. . . . ¶ Feb. 6 at 8: A program of films by Pat O'Neill, Ron Rice, and Paul Sharits.

Note—The Museum of Modern Art auditorium will be closed for renovations until sometime in June.

IN BRIEF

SEE ABOVE FOR THEATRE ADDRESSES AND TELEPHONE NUMBERS.
IF A MOVIE HAS BEEN REVIEWED IN THESE PAGES DURING THE PAST TWO YEARS, THE DATE OF ITS REVIEW IS GIVEN.

Absence of Malice—A well-paced newspaper melodrama that queries journalistic practices. Sally Field is the insensitive, eager-beaver Miami reporter who snaps up a false story leaked to her by the head of a federal strike force (Bob Balaban). The federal man's purpose is simply to stir things up by putting pressure on an honest businessman who has Mafia relatives. Paul Newman is the victim who turns the methods of the authorities and the newspaperwoman against them. The script is by Kurt Luedtke, a former newspaperman, the director is Sydney Pollack, and the film is moderately entertaining, but it leaves no residue. Except for the intensity of Newman's sly, compact performance and the marvellously inventive acting of Melinda Dillon in the role of an achingly helpless, frightened woman, and the character bits by Barry Primus, Luther Adler, Josef Sommer, Wilford Brimley, Don Hood, and John Harkins, you could get it all by reading an article. (Reviewed in our issue of 1/4/82.) (Loews 34th Street Showplace, Loews Tower East, Waverly, and Loews Paramount.)

Alphaville (1965)—Jean-Luc Godard ventures into science fiction, with mixed results. The picture is brilliant, yet it's no good. Godard found enough of the future in present-day Paris to create a vision of a new world without constructing sets; it's a sleek, dark, glittering society. At first, the dehumanization is funny and alluring and a little eerie—the modern corridors and ramps and the flickering lights suggest something almost supernaturally impersonal—but the people of Alphaville are ruled by a giant computer, and soullessness can be very monotonous. The movie was shot at night, and it seems to give off powerfully soporific vapors, especially since the comic-strip story is an uninspired mixture of sci-fi and private eye that never takes hold. With Eddie Constantine as cool, tough Lemmy Caution (his face is so tired and leathery he's like an old shoe), Anna Karina as the most radiant of robots, and Akim Tamiroff, Laszlo Szabo, Michel Delahaye, and Howard Vernon. Written and directed by Godard; cinematography by Raoul Coutard; the score, which has elements of parody, is by Paul Misraki. (In the 1968 "Weekend," Godard has a very different vision of the dehumanized future: the consumer society regresses to barbarism and cannibalism.) In French. (Bleecker Street Cinema; Feb. 5-6.)

The Amityville Horror (1979)—Based on the book, which should have been called "The Amityville Nuisance." A young couple (James Brolin and Margot Kidder) move into a new house and ascribe everything that goes wrong to demons. Everything that goes wrong in the movie can be ascribed to cheap tricks. With Rod Steiger as the obligatory priest. Directed by Stuart Rosenberg. (Hollywood Twin Cinema 2; Feb. 4-5.)

Animal House (1978)—A beery piece that has its amiably funny flashes about the American college system, but more often consists of what is called undergraduate humor. Directed by John Landis. (Hollywood Twin Cinema 2; Feb. 1-3.)

Anna Karenina (1935)—Greta Garbo is Anna in this version, directed by Clarence Brown from a screenplay that S. N. Behrman, Clemence Dane, and Salka Viertel all worked on. The picture is more M-G-M than Tolstoy; the cast includes Fredric March as Vronsky and Basil Rathbone as Karenin, and also Maureen O'Sullivan, Constance Collier, May Robson, Mischa Auer, and Freddie Bartholomew. God knows it isn't all it might be, and Garbo isn't even at her best, but she's there to be gazed upon. (Regency; Feb. 4-6.)

Arthur—As Hobson, the valet to a drunken millionaire playboy, John Gielgud may be the most poised and confident funnyman you'll ever see. And as the top-hatted lush, Arthur, Dudley Moore has a mad sparkle in his eyes. This is the first movie directed by Steve Gordon (who also wrote the script); he's a long way from being able to do with images what he can do with words, but there are some inspired bits, and his work has a friendly spirit. But Liza Minnelli, as the poor-girl heroine, doesn't have her share of the good lines, and she's electrifying when she needs only to be charming; as the playboy's grandmother, Geraldine Fitzgerald has the worst scenes, and the zest she gives them goes peculiarly wrong. Cinematography by Fred Schuler; he makes the New York locations look elegant, even when the staging suggests a waxworks museum. (7/27/81) (Criterion Theatres.)

Atlantic City—This spa that became a racketeer's paradise during Prohibition and is now on its chaotic way to becoming Vegas with a beach is an improbable place, and in this lyric farce, directed by Louis Malle, from John Guare's script, it gives a hallucinatory texture to the lives of the characters. The story is a prankish wish-fulfillment fantasy about prosperity—what it does to cities, what it can do for people. It takes Malle a little while to set up the crisscrossing of the major characters, but once he does, the film operates by its own laws in its own world, and it has a lovely fizziness. Everything goes wrong and comes out right. The casting is superb. As an old numbers-runner who dreams of the days when he was a flunky and bodyguard for big-time racketeers, Burt Lancaster gives what is probably his funniest (and finest) performance. Susan Sarandon plays an uneducated girl studying to become a croupier, and for once her googly-eyed, slightly stupefied look seems perfect. With Kate Reid, Hollis McLaren, Robert Joy, Michel Piccoli, and many fine character actors. Cinematography by Richard Ciupka. (4/6/81) (Gramercy, Olympia Quad, and Embassy. . . . ¶ Plaza; through Feb. 4.)

Blow Out—What happens seems to go right to your head. It's hallucinatory, and it has a dreamlike clarity and inevitability, but you'll never make the mistake of thinking it's only a dream. John Travolta is Jack, a sound-effects man who happens to record the noise of a car speeding across a bridge, a shot, a blowout, and the crash of the car to the water below. The driver—the governor who is the most popular candidate for the Presidency—is dead, but Jack is able to rescue the governor's passenger, a cuddly blonde (Nancy Allen). On paper, this Watergate movie, written and directed by Brian De Palma, might seem to be just a political thriller, but it has a rapt intensity that makes it unlike any other political film. Playing an adult (his first), and an intelligent one, Travolta has a vibrating physical sensitivity like that of the very young Brando, and Nancy Allen, who gives her role a flirty iridescence, is equally vivid. It's as if De Palma had finally understood what technique is for; this is the first film he has made about the things that really matter to him. It's a great movie. With John Lithgow, Dennis Franz, and Deborah Everton as the unlucky hooker. Set in Philadelphia; cinematography by Vilmos Zsigmond. (7/27/81) (Olympia Quad; starting Feb. 5.)

Bombshell (1933; also known as "Blonde Bombshell")—A wisecracking comedy-satire, with Jean Harlow in the title role as a good-hearted, dumb-blond movie star. Great fun in the uninhibited early-thirties style, made at M-G-M before fear of church pressure groups turned the studio respectable and pompous. Lee Tracy is the star's finger-wagging, fast-talking press agent, and Franchot Tone is slickly funny as the man who woos her with such lines as "Your hair is like a field of daisies—I should like to run barefoot through your hair." With Frank Morgan, Una Merkel, Ted Healy, Isabel Jewell, Pat O'Brien, Louise Beavers, and C. Aubrey Smith. Victor Fleming directed rather stridently and unimaginatively, but from an enjoyable snappy, rude script by John Lee Mahin and Jules Furthman, adapted from a play by Caroline Francke and Mack Crane. (Theatre 80 St. Marks; Feb. 1.)

The Border—With Jack Nicholson and Harvey Keitel, directed by Tony Richardson. (Reviewed in this issue.) (Murray Hill, Gemini, U.A. East, and Rivoli; starting Jan. 29.)

Caesar and Cleopatra (1946)—Despite its resonant title, Shaw's play is a minor comedy—a slight, sly conceit—and it was blown up out of proportion in this extravagant, Shaw-adoring version directed by Gabriel Pascal from Shaw's script. The pomp overpowers the parody and the playfulness. Vivien Leigh romps about as the cruel, deceiving kitten who is to become a passionate, tragic queen, while Claude Rains—as her lover and mentor, the amused, dispassionate Caesar—displays a world-weary wisdom that is more smugly shallow than Shaw could have intended. When Rains played a small part, he sometimes gave the impression that he was carrying a movie, but here his equanimity and his impish grin aren't enough. It's lucky that Leigh has such an amusing ding-a-ling quality—she lightens portions of this overstaged production. With an entertaining celebrity-show cast that includes Flora Robson, Stewart Granger, Francis L. Sullivan, Basil Sydney, Michael Rennie, Cecil Parker, Stanley Holloway, Leo Genn, Anthony Harvey, Jean Simmons, Esmé Percy, and the invaluable Ernest Thesiger. Music by Georges Auric; cinematography by Freddie Young, Robert Krasker, Jack Hildyard, and Jack Cardiff; décor and costumes by Oliver Messel and sets by John Bryan. (Regency; Feb. 2-3.)

Chariots of Fire—The story of the courage and the triumph of two young runners who represented Britain in the 1924 Olympics, held in Paris. The runners—Harold Abrahams (Ben Cross), a wealthy Jewish boy who is a student at Cambridge, and Eric Liddell (Ian Charleson), a Scottish divinity student—win because they have something to run for. The unbelievably self-possessed Abrahams runs against anti-Semitic snobbery and prejudices, and the devout Liddell runs in an ecstatic state, because "when I run, I can feel His pleasure." The picture is a piece of technological lyricism held together by the glue of simpleminded heroic sentiment; basically, its appeal is in watching a couple of guys win their races. Produced by David Puttnam, directed by Hugh Hudson (it's his début film), from Colin Welland's script. Cinematography by David Watkin; music by Vangelis Papathanassiou. With Lindsay Anderson, John Gielgud, Alice Krige, Ian Holm, Cheryl Campbell, Dennis Christopher, Brad Davis, Nigel Havers, Nicholas Farrell, Nigel Davenport, Patrick Magee, and David Yelland as the Prince of Wales. (10/26/81) (Art, Manhattan, and Lincoln Plaza. . . . ¶ Criterion Theatres; starting Jan. 29.)

Days of Heaven (1978)—Terrence Malick wrote and directed this story of adultery, set principally in the wheat fields of the Texas Panhandle just before America entered the First World War. It's both a nostalgic and an anti-nostalgic vision of the American past. The landscapes are vast and lonely, with the space in the images strained and the figures tilted; the characters are monosyllabic—near mute. What is unspoken in this picture weighs heavily on us, but we're not quite sure what it is. The film is an empty Christmas tree: you can hang all your dumb metaphors on it. Richard Gere plays Bill, who works in a blast furnace in Chicago; he gets into a brawl with the foreman and heads south, taking his girl, Abby (Brooke Adams), and his twelve-year-old sister, Linda (Linda Manz), with him. They find work in the fields of a wealthy young farmer (Sam Shepard), who falls in love with Abby. When Bill learns that the farmer may be dying, he encourages Abby to marry him—so that she can soon be a rich widow. The movie is oblique, except for the narration, which is by Linda; she's a little-girl wise guy, and all the humor in the film comes from her laconic remarks, but she's also precociously full of the wisdom of the ages, and at times her illiterate poetry is drenched in wistfulness and heartbreak. Shot by Nestor Almendros, with additional photography by Haskell Wexler, the film is a series of pictorial effects—some of them, such as a train passing over a lacework bridge, extraordinary—but the overpowering images seem unrelated, pieced together. The movie suffers from too many touches, too many ideas that don't grow out of anything organic. It's an epic pastiche. Though the irregularly handsome, slightly snaggletoothed Shepard has almost no lines, he makes a strong impression; he seems authentically an American of an earlier era. But Gere, with his post-fifties acting style and the associations it carries of Brando and Dean and Clift and all the others who shrugged and scowled and acted with their shoulders, is anachronistic. Shot in Alberta, Canada. (St. Marks Cinema; through Jan. 28.)

Dr. No (1963)—Ian Fleming's famous hero, James Bond, pits himself against a human fiend in a citadel of evil in the Caribbean. With Sean Connery as Bond. (Hollywood Twin Cinema 2; starting Feb. 6.)

Don't Bother to Knock (1952)—Marilyn Monroe as a psychotic babysitter. She wasn't yet a box-office star, but her unformed—almost blobby—quality is very creepy, and she dominated this melodrama. In other respects, it's standard, though the New York hotel setting helps, and so does the young Anne Bancroft, as a singer who works in the hotel. Roy Baker directed fairly efficiently, from Daniel Taradash's screenplay, based on Charlotte Armstrong's novel. With Richard Widmark as the airline-pilot hero, Donna Corcoran, Elisha Cook, Jr., Jim Backus, Don Beddoe, Jeanne Cagney, and Lurene Tuttle. Cinematography by Lucien Ballard. (Theatre 80 St. Marks; Jan. 31.)

Dressed to Kill (1980)—One of the most sheerly enjoyable films of recent years, this sophisticated horror comedy, written and directed by Brian De Palma, is permeated with the distilled essence of impure thoughts. Set in Manhattan, it's about sex and fear; De Palma presents extreme fantasies and pulls the audience into them with such apparent ease that the pleasure of the suspense becomes aphrodisiacal. Angie Dickinson shows a much warmer expressive range than might be expected as a beautiful, aging golden blonde, married yet frustrated, and longing to be made love to; Michael Caine brings fine, precise shadings of ambiguity to the role of her analyst; the breezy comedienne Nancy Allen is a pretty, investment-minded hooker, who witnesses a murder; Keith Gordon is Dickinson's teen-age prodigy son, who builds computers; and Dennis Franz is a brash police detective. The music is by Pino Donaggio, the cinematography is by Ralf Bode, and the editing is by Jerry Greenberg. (8/4/80) (Olympia Quad; starting Feb. 5.)

The Exterminating Angel (1962)—A comic metaphor about a dinner party that so supernaturally grips the diners that it can't be broken up but declines into primitive conflict and havoc. Directed by Luis Buñuel; inadequately acted, but still an interesting and funny piece that no one else could have

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made. In Spanish. (Olympia Quad 1; Feb. 3-4.)

For Your Eyes Only—The twelfth James Bond film goes through the motions, but not only are we tired of them, the actors are tired of them—even the machines are tired. It has got to the point where if the machines do something they haven't done before, we've seen it before anyway. Roger Moore, as Bond, is a dutiful, passive actor; his idea of Bond's imperturbable cool is the same as playing dead. And the producers have erred in deciding on a simpler, more realistic package, without dazzling sets or a big, mad, supervillain. The heroine (Carole Bouquet) is a lovely tall brunette who photographs like a goddess but has no more animation than the hero; the only jazziness in the movie comes from Lynn-Holly Johnson, playing a teen-age trollop who's a champion ice skater. With Topol, Julian Glover, Jill Bennett, Cassandra Harris, and Janet Brown as the Prime Minister. Directed by John Glen; written by Richard Maibaum and Michael Wilson. (Hollywood Twin Cinema 2; Feb. 4-5.)

Four Friends—Arthur Penn goes laboriously, painfully wrong in this story about the friendship of three boys and the girl whom each of them loves at some time—a friendship that spans the American social changes of the sixties and takes the four through adolescence (in Indiana) to maturity. The script is Steve Tesich's semi-autobiographical account of the arrival in this country of a Yugoslavian youth, Danilo, who comes with a heavy, symbolic trunk—it seems to be full of solid values. There's a wholesome, beefy moralism in Tesich's writing, and Penn brings out its hearty bouquet. The film combines the worst of the Freudianism and the self-pity of the William Inge-Elia Kazan "Splendor in the Grass" with the worst of the immigrant theme of Kazan's "America America." The characters are always learning life's important lessons, and the movie carefully spells out which side it's on. The colorless quartet is made up of Craig Wasson as Danilo, Jodi Thelen as the girl, and Jim Metzler and Michael Huddleston. Also with Miklos Simon, Reed Birney, Julia Murray, James Leo Herlihy, and Lois Smith. (1/4/82) (Little Carnegie; through Jan. 28. . . . ¶ Loews 34th Street Showplace, Loews New York, and Embassy; starting Jan. 29. . . . ¶ Greenwich Playhouse, and Quad Cinema; starting Jan. 29, tentative.)

The French Lieutenant's Woman—Meryl Streep gives an immaculate, technically accomplished performance as Sarah Woodruff, the romantic mystery woman of John Fowles' novel, but she's so distanced from us that all we can do is observe how meticulous Streep—and everything else about the movie—is. Harold Pinter, the famed compressor who did the adaptation, has emptied out the story, and the director, Karel Reisz, has scrupulously filled in the space with "art;" every vocal inflection is exact, the 1867 settings seem flawless, and the cinematographer Freddie Francis's camera movements and muted colors are superbly elegant. The result is overblown spareness. With Jeremy Irons, Lynsey Baxter, Hilton McRae, Leo McKern, Patience Collier, Penelope Wilton, and David Warner. (10/12/81) (Loews New York; through Jan. 28.)

From Russia with Love (1964)—The second in the James Bond series—exciting, handsomely staged, and campy—with Sean Connery pitted against a blond Robert Shaw and Lotte Lenya with a dagger in her shoe. Directed by Terence Young. (Hollywood Twin Cinema 2; starting Feb. 6.)

The Godfather, Part II (1974)—The daring of "Part II" is that it enlarges the scope and deepens the meaning of the first film. Visually, "Part II" is far more complexly beautiful than the first, just as it's thematically richer, more shadowed, fuller. The completed work, contrasting the early manhood of Vito (Robert De Niro) with the life of Michael, his inheritor (Al Pacino), is an epic vision of the corruption of America. (The three hours and twenty minutes of "Part II" span almost seventy years.) Directed by Francis Ford Coppola. The script is credited to Coppola and Mario Puzo, from Puzo's novel. The cast includes Robert Duvall, John Cazale, Lee Strasberg, Michael V. Gazzo, Talia Shire, Troy Donahue, Gianni Russo, Diane Keaton, G. D. Spradlin, Morgana King, Harry Dean Stanton, Joe Spinell, Fay Spain, Danny Aiello, Richard Bright, Gaston Moschin as Fanucci, Abe Vigoda, Tom Rosqui, B. Kirby, Jr., and Leopoldo Trieste; with a brief appearance by James Caan, and by Phil Feldman, Roger Corman, and William Bowers as United States senators. Cinematography by Gordon Willis; production design by Dean Tavoularis; music by Nino Rota, conducted by Carmine Coppola. (8th St. Playhouse; Feb. 2.)

Heartland (1979)—An account of early-twentieth-century ranching in a bleak Wyoming, with good performances from Conchata Ferrell, as a Denver widow who undertakes keeping house for a beleaguered rancher, and Rip Torn, as the stoic cattleman whom she eventually marries. The film is straightforward and compelling—a real triumph for the director, Richard Pearce, and for the National Endowment for the Humanities, which put up the bulk of the financing. (Beekman; starting Jan. 29.)

The Hustler (1961)—The test of what a man has inside him—the Hemingway type of story frequently set in the bullring or, in this country, in the world of sports, especially among prizefighters. Here, it is set in the world of pool sharks. Paul Newman is the young contender, Eddie Felson; Jackie Gleason is the old champ, Minnesota Fats; Piper Laurie is Eddie's girl; and George C. Scott is his evil manager. Robert Rossen directed this fine movie, which is marred, however, by too conscious an effort at pungent dialogue and some rather murky notions of perversion and corruption. But it's a strong movie, and Newman gives a fine, emotional performance. With Murray Hamilton and Myron McCormick, who is stuck with a terrible pseudo-Odets role. (Hollywood Twin Cinema 1; starting Feb. 6.)

Irma la Douce (1963)—Abominable, inexplicably popular sex farce, adapted from a stage musical comedy, but with the score omitted. Billy Wilder, the producer-director, and his co-scenarist, I. A. L. Diamond, hit us over the head with the old rotten jest that prostitution is a petit-bourgeois way of life like any other. Shirley MacLaine and Jack Lemmon, vivid and gifted comics, wrestle painfully with the gross dialogue. Sample: MacLaine, showing Lemmon her attic apartment, explains that it once belonged to an artist who cut off his ear. "Oh," says Lemmon. "Was his name van Gogh?" "No," says MacLaine, "Schwartz." With Lou Jacobi and Herschel Bernardi. (Hollywood Twin Cinema 2; Feb. 1-3.)

The Last Detail (1974)—After fourteen years in the Navy, Buddusky (Jack Nicholson), the tattooed signalman, lives on ingrained resentment, quick anger, and booze. The screenwriter Robert Towne shaped the role to Nicholson's gift for extremes, and it was the best full-scale part Nicholson had had up to that time. The movie is the record of the beer-soaked journey that Buddusky and a gunner's mate (Otis Young) take when they're assigned to escort a morose eighteen-year-old seaman (Randy Quaid) from the brig in Norfolk, Virginia, to the naval prison in Portsmouth, New Hampshire. The film is distinguished by the fine performances of Nicholson and Quaid, and by well-orchestrated profane dialogue. It's often very funny. It's programmed to wrench your heart, though—it's about the blasted lives of people who discover their humanity too late. Hal Ashby directed. With Michael Moriarty, Carol Kane, Luana Anders, Clifton James, Nancy Allen, and Gilda Radner. Cinematography (grainy and gloomy) by Michael Chapman. Adapted from Darryl Ponicsan's book. (Hollywood Twin Cinema 2; Jan. 28-29 . . . ¶ Thalia; Feb. 4.)

The Last Waltz (1978)—Martin Scorsese's film commemorating a rock-and-roll performance by The Band. Scorsese has proved himself a most interesting director, but this movie is a failed exercise in melancholy over times past. The lingering attention to the aging of the musicians—who are actually still youngish but regarded by themselves and the film as passé—is apt to seem maudlin and spoiled-child. The sound system is an overloud nightmare that makes one feel like a fly caught in a twenty-four-track-stereo biscuit box. (Sutton; through Feb. 4.)

The Magic Christian (1970)—Terry Southern's satirical novel, in a sloppy British version, directed by Joseph McGrath, that never quite seems on target. There are funny moments, but they don't add up to enough. With Peter Sellers, Ringo Starr, Laurence Harvey, Spike Milligan, Raquel Welch, Leonard Frey, Christopher Lee, John Cleese, Graham Chapman, Dennis Price, Patrick Cargill, Roman Polanski, and Wilfrid Hyde-White. (Thalia; Feb. 2.)

Major Barbara (1941)—Terrible, but bearable; there's a fascination to its clunkiness. Shaw had allowed "Pygmalion" to be cut and adapted for the screen, and it was a great success, but he got stubborn on this one and hung on to his dialogue; Gabriel Pascal, who had produced "Pygmalion," had also been spoiled by its success and decided to direct this time. Their failings were compounded: the actors posture and talk, and the movie goes on and on until whatever it's meant to be about no longer seems to matter. It's too cheerful to be really boring, however. The cast includes Rex Harrison (in a role based on Gilbert Murray), Wendy Hiller, Robert Morley, Sybil Thorndike, Robert Newton, Emlyn Williams, Deborah Kerr, and Stanley Holloway. William Walton did the score, Cecil Beaton the costumes. (Regency; Feb. 2-3.)

Mrs. Miniver (1942)—M-G-M's wartime salute to gallant England, engineered to make the audience choke up. The theme is the gentry under fire, with, at the same time, some regard for the old nobility and a smile for the quaint antics of the servants under stress. Greer Garson is the excruciatingly proper paragon heroine, courteous and controlled in every crisis, and Walter Pidgeon is her husband. William Wyler directed this generally offensive picture, adapted from a novel by Jan Struther; shamelessly, it ends with the heroic characters singing "Onward, Christian Soldiers" in a partially destroyed church. With Dame May Whitty, Teresa Wright, Richard Ney, Henry Wilcoxon, Helmut Dantine, Reginald Owen, and Peter Lawford. (Regency; Jan. 31-Feb. 1.)

My Dinner with André—It's like a mad tea party or a mad, modern platonic dialogue about the meaning of life. Self-effacingly directed, by Louis Malle, it creates the illusion that we are simply listening in on a dinnertime conversation between the playwright Wallace Shawn and the former avant-garde theatre director André Gregory. Wally persuades André to tell him what he has been up to, and the suave, hawklike André, a crackpot glittery-eyed charmer, pours out the record of his transcendental experiences in Poland, in Scotland, in India and Tibet, in the Sahara, and even in Montauk, where he was buried alive in a death-and-rebirth ceremony. What he acts out for us is the questing that has torn so much of the modern theatre apart. When Wally, the pragmatist and sensualist, begins to talk, he plays warthog to André's soaring flights of mysticism. They're perfect foils. This is a bizarre and surprisingly entertaining satirical comedy: the story of the search beyond theatre turned into theatre—or, at least, into a movie. (1/4/82) (Lincoln Plaza.)

Nothing Sacred (1937)—A screwball satire that was a huge success. What are generally sentimentalized as "the little people" are the targets of this famous thirties comedy. Ben Hecht, who wrote the script, has them happily dripping crocodile tears over a girl they think is dying of radium poisoning. The audience may begin to wonder what makes the reporter hero, Fredric March, and the girl, Carole Lombard—who was by that time "the Duse of daffy comedy"—any different. The answer can only be that they, like the author, hate phoniness. William Wellman's direction is more leisurely than usual; he has such good material here that he takes his time. There are classic sequences: March, the New York City sophisticate, arriving in a small town and learning how the natives feel about strangers when a small boy runs up and bites his leg; Lombard passing out while showgirls impersonating the heroines of history parade in her honor. And a great slugging match between March and Lombard. With Walter Connolly as the dyspeptic big-city editor, Charles Winninger as the alcoholic small-town doctor, Slapsie Maxie Rosenbloom in his acting début, and Frank Fay, Margaret Hamilton, Monty Woolley, Hattie McDaniel, John Qualen, Hedda Hopper, and Sig Rumann. (The film spawned a Broadway musical, "Hazel Flagg," as well as a movie with Jerry Lewis in the Lombard role.) (Theatre 80 St. Marks; Feb. 5-6.)

On Golden Pond—The kind of uplifting twaddle that traffics heavily in rather basic symbols: the gold light on the pond stands for the sunset of life, and so on and on. Directed by Mark Rydell, from Ernest Thompson's adaptation of his own 1978 play, the movie is a doddering valentine in which Popsy Norman (Henry Fonda), who's having his eightieth birthday, and Mopsy Ethel (Katharine Hepburn), who's nearing her seventieth, crack jokes, weather domestic crises, and show us the strength of solid Yankee values. With Jane Fonda, who gives a tense performance in the terrible role of the neurotic daughter of the lovey-dovey old pair, and Dabney Coleman, Doug McKeon, and William Lanteau. (12/7/81) (Loews 34th Street Showplace, Cinema II, R.K.O. Century 86th St., Quad Cinema, New Yorker, and Rivoli.)

Panique (1946)—Julien Duvivier's psychological thriller is a devastatingly effective job of visual storytelling. Michel Simon is the stranger in a Paris suburb who is framed for murder; Viviane Romance and her lover, Paul Bernard, are the ones who trap him. The sordid, intriguingly nasty movie—taken, inevitably, from a Simenon novel—has some pretensions toward being a parable of sadistic injustice; on that level, it can't be taken very seriously. But in terms of how the sequences are planned, and how they build, it's an unusual, near-perfect piece of film craftsmanship. In French. (Theatre 80 St. Marks; Feb. 3.)

Pennies from Heaven—A startling, stylized big M-G-M musical, set in the mythology of the Depression. When the characters can't say how they feel, they open their mouths, and out of them come the voices on hit records of the thirties. And as they lip-sync the lyrics their obsessed eyes are burning bright. Their souls are in those voices, and they see themselves dancing just like the stars in movie musicals. The dance numbers are funny, amazing, and beautiful all at once; several of them are just about perfection. And though some of the dialogue scenes are awkwardly paced and almost static, they still have a rapt, gripping quality. Steve Martin, Bernadette Peters, Christopher Walken, Vernel Bagneris, Jessica Harper, Tommy Rall, Robert Fitch, and Jay Garner all seem to be working at their highest capacities. This is also true of Danny Daniels, who did the choreography; Ken Adam, who designed the production; Bob Mackie, who did the costumes; Gordon Willis, who was the cinematographer; and Dennis Potter, who wrote the script, which is adapted from his six-segment BBC series. The film was directed by Herbert Ross. (12/21/81) (Ziegfeld.)

Pixote—A shockingly lyrical Brazilian film about the life of some abandoned children who learn to pick pockets and grab purses and hustle—it's their only way of surviving. Outsmarted by the adult criminals, the kids buy an aging, drunken prostitute from a pimp and go into business with her: she brings men home, and they rob them at gunpoint. As the director, Hector Babenco (who appears in a prologue), sees it, the ten-year-old Pixote is a snub-nosed infant asserting his wants, and when they're denied he changes into a baby gangster—a runt Scarface, who kills innocently, in the sense that he doesn't understand the enormity of the crime. The thesis is too pat, but two of the characters—Lilica (Jorge Julião), a flamingly nelly seventeen-year-old transvestite homosexual, and the whore Sueli (Marília Pera), the whoriest whore imaginable—transcend it. Dusky and aquiline-faced, Marília Pera has an Anna Magnani-like presence—horrifying and great. In Portuguese. (11/9/81) (Cinema Studio; through Feb. 4. . . . ¶ Quad Cinema; starting Jan. 29, tentative.)

The Prince and the Showgirl (1957)—This Ruritanian romance, directed by Laurence Olivier, is slanted to show off the talents of Marilyn Monroe as an innocent abroad. Olivier, perhaps with excess gallantry, makes his prince something of a cold cod, but even in this ungratifying role he has a high gloss—an irony that shines. Monroe's breathy little-girl voice and polymorphous-perverse non-acting have a special mock-innocent charm that none of her imitators seems able to capture. With Sybil Thorndike, Richard Wattis, and Daphne Anderson. The drawback of the film is that Terence Rattigan's script, though it improves on his play "The Sleeping Prince," still lacks invention and wit. (Theatre 80 St. Marks; Jan. 31.)

Prince of the City—Treat Williams as a New York police officer who agrees to be wired in order to obtain evidence about corruption in his unit goes through so much teary, spiritual agony that you want to throw something at him. He acts all over the place, yet the movie—two hours and forty-seven minutes of pseudo-documentary seriousness—is so poorly structured that you keep wondering what's going on and why he has agreed to inform on his friends. There's one remarkable performance, mostly in the last section: Jerry Orbach, as the tough-minded cop Gus Levy. Directed by Sidney Lumet and based on the book by Robert Daley about the New York City police officer Bob Leuci. With Lindsay Crouse, Bob Balaban, and Ron Maccone, as Nick. The cinematography is by Andrzej Bartkowiak, the music by Paul Chihara. (Quad Cinema; through Jan. 28.)

Queen Christina (1934)—Garbo great, with John Gilbert, directed by Rouben Mamoulian. She poses as a man, dressed in black velvet, in a famous inn scene in which she is asked to share a bedroom with the Spanish ambassador; no one has ever come near her ability as an actress to suggest opposite emotions at the same time, and her mixture here of the debonair and the bashful is delicately comic. The film ends, historically, with a heartrending closeup of Garbo's face that runs for eighty-five feet. When asked what he told Garbo to think of when she was doing the shot, Mamoulian replied, "Nothing, absolutely nothing." (Regency; Feb. 4-6.)

Ragtime—The movie doesn't have an impudent slapstick vision, isn't a pop epic, or even a satiric fling. It's limp—it always seems to be

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aiming about halfway toward the effects that E. L. Doctorow achieved in his literary extravaganza. Is it possible that the director, Miloš Forman, thought that if he didn't go for razzle-dazzle what was left would be "truth"? If so, he started from the wrong book. He has made a seriously intended eccentric movie about a black piano player (Howard E. Rollins) who demands redress for an insult. But the picture isn't even socially conscious: the character is so totally, aberrantly unbelievable that there's no social milieu that could account for him. With James Cagney as the New York Police Commissioner, and Pat O'Brien, Donald O'Connor, Norman Mailer, Elizabeth McGovern, Mary Steenburgen, Mandy Patinkin, Kenneth McMillan, Moses Gunn, Brad Dourif, Robert Joy, and James Olson. Script by Michael Weller. (11/23/81) (34th St. East, Baronet, and Loews State.)

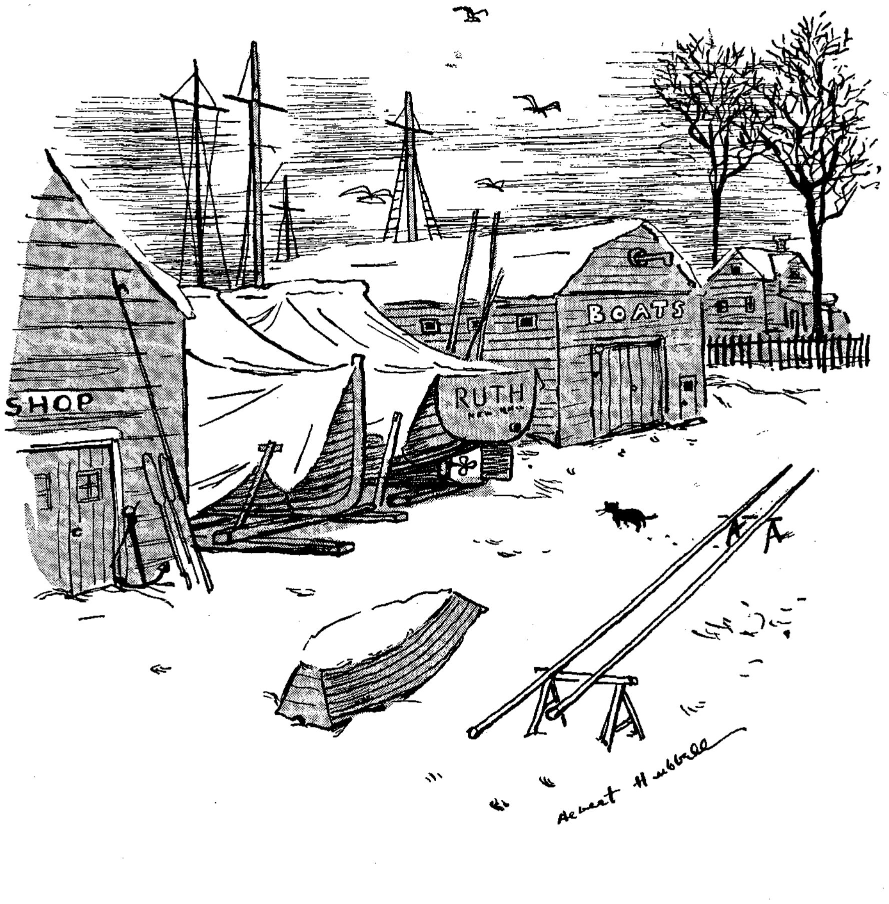
Raiders of the Lost Ark—Steven Spielberg directed this high-powered cliff-hanger about the exploits of Indiana Jones (Harrison Ford), an adventurer-archeologist. The time is 1936, and Indy, working for the United States government, is trying to find the Ark of the Covenant (a chest holding the broken stone tablets of the Ten Commandments) ahead of his arch-enemy, the suave, amoral Belloq (Paul Freeman), who is in cahoots with the Nazis. Kinesthetically, the film works, but not emotionally. With Karen Allen as Marion, John Rhys-Davies as Sallah, and Ronald Lacey as Toht. Written by Lawrence Kasdan, from a story idea worked up by George Lucas and Philip Kaufman. (6/15/81) (57th St. Playhouse. . . . ¶ Embassy 1; through Feb. 4. . . . ¶ Embassy; starting Feb. 5.)

Reds—Warren Beatty, who was the producer, the director, and the co-writer (with Trevor Griffiths), also plays the hero, the American journalist John Reed, who took part in the Bolshevik Revolution and wrote "Ten Days That Shook the World." Diane Keaton plays Reed's wife, the independent-minded Louise Bryant. The film, which runs three hours and twenty minutes, is conceived as a love story set against a background of bohemian living and revolutionary fervor. But the writers didn't work out a scrutable character for Louise. Beatty is often touching, and he does some of the best acting he has ever done, but he doesn't let his energy come through; he plays so much on what the audience responds to in him—the all-American combination of innocence and earnestness—that he's in danger of turning into Li'l Abner. The subject—the romantic life of an American Communist—may be daring, but the moviemaking is extremely traditional. With Jack Nicholson as Eugene O'Neill, and Gene Hackman, Paul Sorvino, the novelist Jerzy Kosinski as Zinoviev, Edward Herrmann, and Max Wright. Best of all: Maureen Stapleton as Emma Goldman, and a group of contemporaries of the Reeds (e.g., Rebecca West, Hamilton Fish), who appear in documentary interviews as "witnesses." Cinematography by Vittorio Storaro. (12/21/81) (Bay Cinema, Coronet, and Loews Astor Plaza.)

Sandakan 8 (1974)—A marvel of a Japanese film, directed by Kei Kumai, about a young, Westernized woman historian who stumbles into a moving friendship with an old woman who was shipped to Borneo at the age of thirteen to become a prostitute. The old woman lives now in a shack, with innumerable cats, and the visit of the young woman gives her as much gaiety in her privation as we often find in Beckett's last-ditch and oddly festive situations. In Japanese. (Bleecker St. Cinema; Feb. 2.)

Sanjuro (1963)—Toshiro Mifune as the fastest sword in the East, in a mocking melodrama directed by Akira Kurosawa. In Japanese. (Thalia; Jan. 31.)

Shoot the Moon—As Faith and George Dunlap, whose marriage has become poisoned because she knows all his weaknesses and failures, and because her knowledge eats away at his confidence, Diane Keaton and Albert Finney give the kind of performances that in the theatre become legendary. And, in its smaller dimensions, Dana Hill's performance as their thirteen-year-old daughter is perhaps equally fine. This unapologetically grownup movie about separating is perhaps the most revealing American film of its era. Though the director, Alan Parker, doesn't do anything innovative in technique, it's a modern movie in terms of its consciousness. The characters in the script, written by Bo Goldman, aren't taken from the movies, or from books either. Their emotions are raw, and rawness is what makes this film get to you. It goes way past coolness. Diane Keaton has no vanity: Faith's angry misery is almost like a debauch—it makes her appear sodden. And both as a character and as an actor, Finney seems startled and appalled by what has been let loose in him. He's an actor possessed by a great role—pulled into it kicking and screaming. With Peter Weller, Karen Allen, George Murdock, and three child actresses—Viveka Davis, Tracey Gold, and Tina Yothers. Filmed on locations in northern California. (1/18/82) (Cinema I.)



Stagecoach (1939)—Perhaps the most likable of all Westerns, and a Grand Hotel-on-wheels movie that has just about everything—adventure, romance, chivalry—and all of it very simple and traditional. John Ford directed, from a script by Dudley Nichols, based on a story by Ernest Haycox—"Stage to Lordsburg." The cast includes John Wayne, at his most appealing as the Ringo Kid; Claire Trevor as the good-hearted whore, Dallas; and skinny-faced John Carradine as the gambler, Hatfield. With Louise Platt, George Bancroft, Thomas Mitchell as Doc, Andy Devine, Donald Meek, Berton Churchill, Tom Tyler, Chris Pin Martin, Tim Holt, Francis Ford, Florence Lake, and the second unit-director, Yakima Canutt, as the white scout, and Chief White Horse as the Indian chief. Cinematography by Bert Glennon; filmed in California, Arizona, and Monument Valley, Utah. (There was a pitiful remake, by Gordon Douglas, in 1966; a big, brawling action picture, it featured Ann-Margret as the whore.) (Bleecker St. Cinema; Feb. 4.)

Street of Shame (1956)—Kenji Mizoguchi's ascetic view of the lives of the inhabitants of Tokyo's red-light district, with Machiko Kyo. In Japanese. (Bleecker St. Cinema; Feb. 1.)

Sunrise (1927)—A near masterpiece, made in Hollywood by the great German director F. W. Murnau, who was given contractual assurance that there would be no interference by the studio (Fox). The script, freely adapted from Hermann Sudermann's "A Trip to Tilsit," was prepared in Berlin by Carl Mayer, and Murnau planned the whole film there, on the basis that the story was universal. The opening title reads, "This story of a Man and his Wife is of nowhere and everywhere; you might hear it anywhere and at any time." The man (George O'Brien) and his wife (Janet Gaynor) are rural Americans; their happiness is disrupted by a city temptress (Margaret Livingston) who seduces the man and persuades him to drown his wife. The story is told in a flowing, lyrical German manner that is extraordinarily sensual yet is perhaps too self-conscious, too fablelike, for American audiences. (Huge stylized sets were built.) The film failed commercially, and on his next two Fox projects Murnau didn't have the same freedom. There are some masterly sequences: the seduction under a full moon, the wife's flight (she boards a trolley). Cinematography by Karl Strüss and Charles Rosher; art direction by Rochus Gliese (Edgar Ulmer was one of his assistants). Silent. (Thalia; Feb. 3.)

Ticket to Heaven—A Canadian film on a hot, dramatic subject. On a trip to San Francisco, the hero (Nick Mancuso), a handsome young Toronto schoolteacher, is sucked into a religious cult that worships its Oriental founder. Deprived of sleep, of food, and of any solitude for reflection, he gradually shrinks into a smiling child-zombie panhandler. As the hero's friend, Saul Rubinek has a wry, affectionate manner and bright, brimming eyes that register double takes. The picture could have used a better script and more taut direction, but the subject in itself makes it fairly compelling. Based on Josh Freed's 1978 newspaper series and on his 1980 book "Moonwebs." With Meg Foster, Guy Boyd, and Robert Joy; directed by Ralph L. Thomas from his and Anne Cameron's script. (11/23/81) (Eastside Cinema, and Embassy 72nd St. . . . ¶ Greenwich Playhouse; through Jan. 28. . . . ¶ Olympia Quad; through Feb. 4.)

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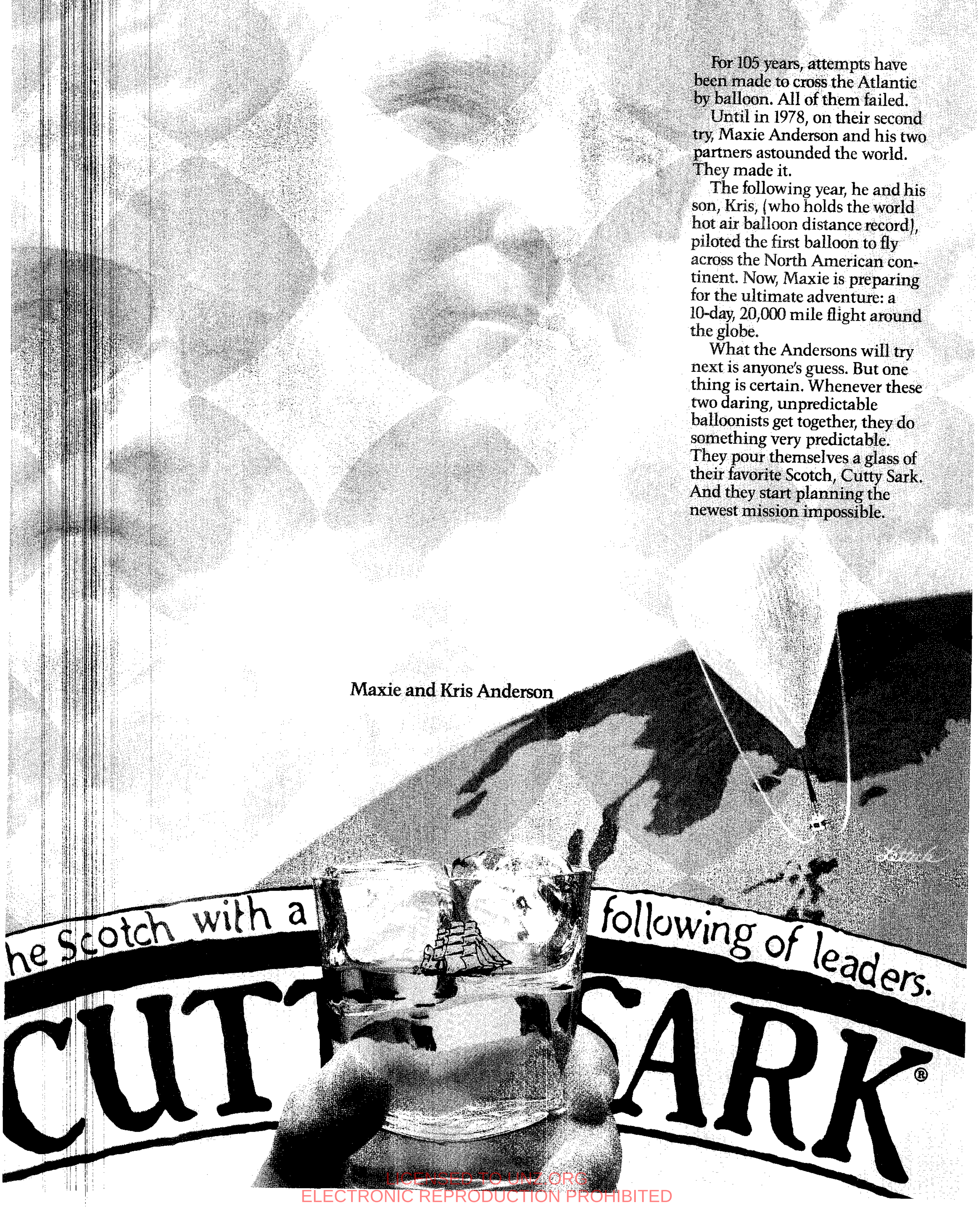

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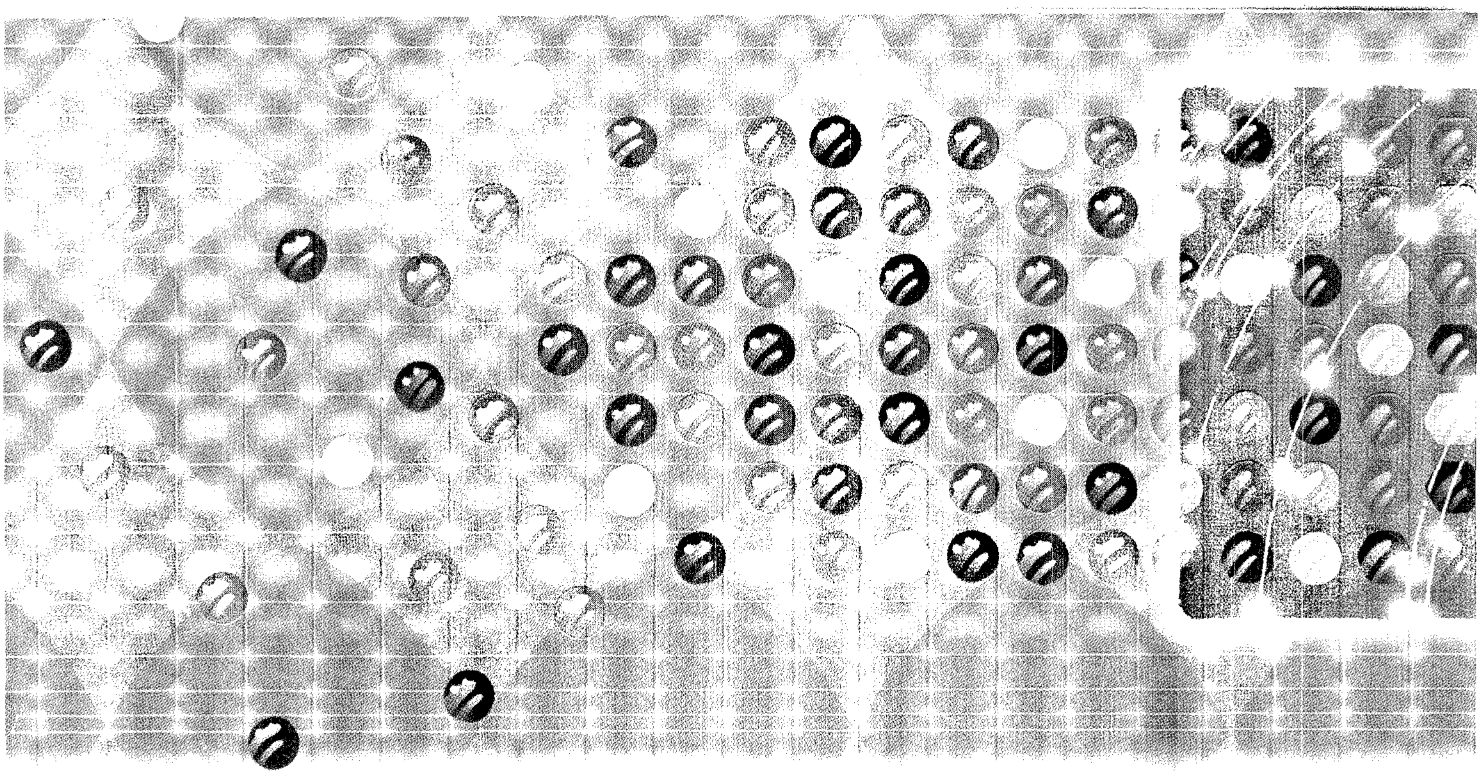

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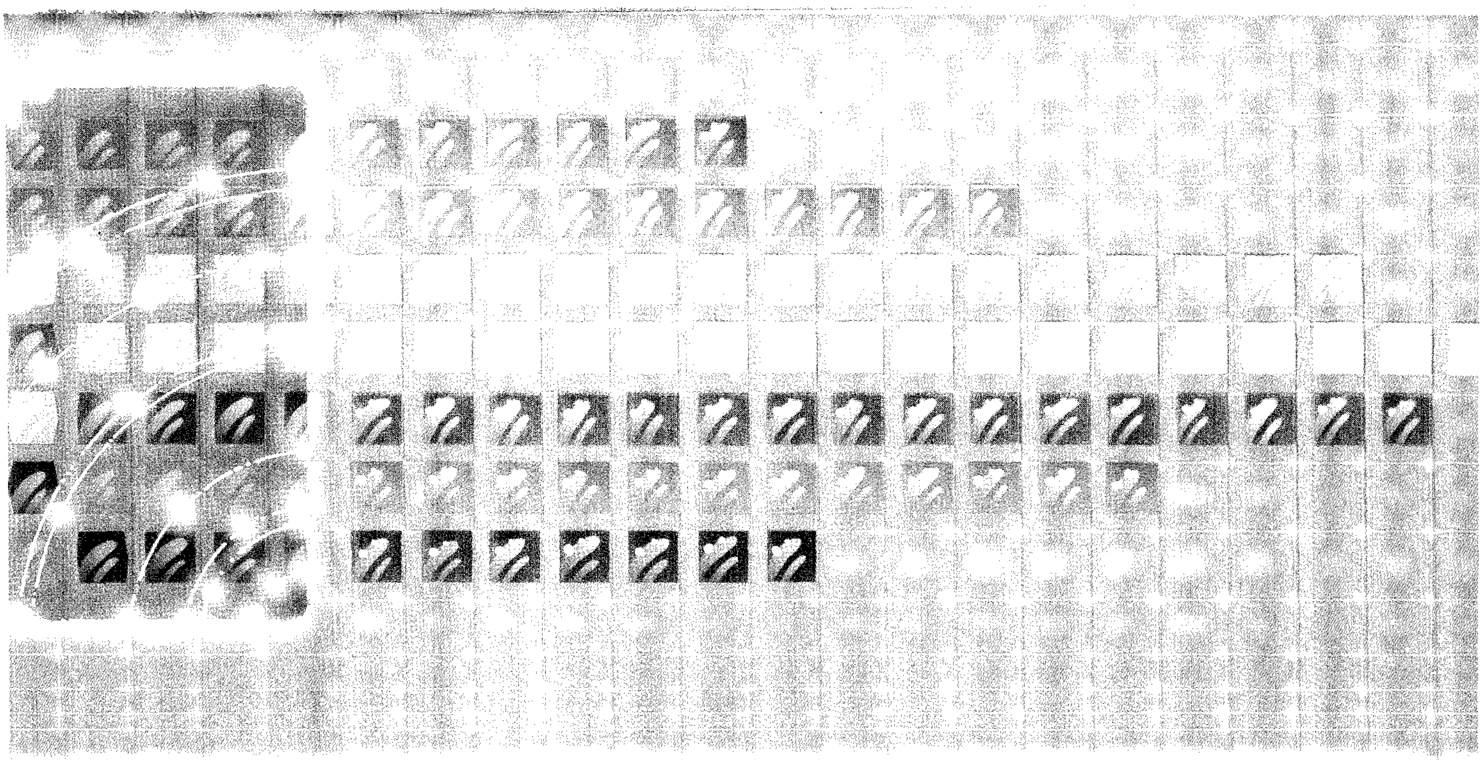

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THE NEW YORKER

THE TALK OF THE TOWN

Notes and Comment

A FRIEND who lives in the Village writes:

A new closet shop has just opened on Tenth Street between Sixth and Greenwich Avenues. It complements a wallpaper store that was recently stocked with towels of many splendid hues, on Sixth between Tenth and Eleventh, and two kitchen-gift shops already occupying considerable space on Tenth between Fifth and University. Tenth Street is the arena of the specialty shop. But the specialties are growing more varied: the ground floors of town houses are being taken over by therapists whose shingles hoist a name followed by a Ph.D.—in one case, four Ph.D.s in a vertical row, with a modest M.A. thrown in for good measure. All the domestic mysteries that used to take place behind closed doors—closet, bath, kitchen—now have commercially available sources nearby, and the unconscious, the biggest mystery of all, has agents practically next door, ready to go to work at a moment's notice. We have no grudge against shops or lay analysts—they save their clients the trouble of going uptown, that terra incognita all Villagers want to avoid. But streets and avenues have qualities unfathomable by reason alone, and when professionals move into a neighborhood as local as Tenth Street something ineffable is lost. The street has the simplest of virtues: attractive architecture, flourishing ginkgoes and plane trees, a human scale. In its ivy-covered bricks, its small front gardens, its planted balconies, elements of the campus and the city, the natural and the urban strike a rare accord. Tenth Street used to lie like an unopened envelope between Fifth and Sixth; it had an air of seclusion, of mystery. And we associate mystery with privacy—our inclination and right not to know about our neighbors' lives, and theirs not to know about ours. Tenth Street's mystery is even simpler than its virtues: it says (and, let us hope, continues to say) that this is a place where people *live*, rather than a place where they vend, entertain, minister, persuade, haggle, or explain.

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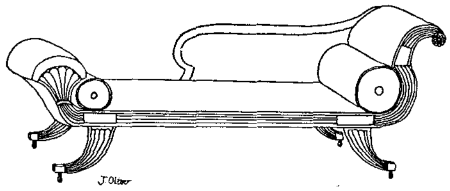
The View from Broadway

WE didn't know until last week that New York is a great place for looking at outer space. We learned that from a NASA astronomer named Patrick Thaddeus, who works at the Goddard Institute for Space Studies, at 112th Street and Broadway—a low-profile building that looks from the street like an average upper-West Side semi-tenement, which is exactly what it used to be. For anyone with a view of the roof, however, the silver dome of a brand-new one-million-two-hundred-thousand-dollar radio telescope is a dead giveaway that something more than upper-West Side living is going on here. Dr. Thaddeus, a man of medium height (five feet nine inches) and medium age (forty-nine), looks low-profile himself. On the day we went to visit him and his telescope, he was dressed in tan corduroy trousers, a green-striped shirt with three different-colored pens and one eyeglass case in the pocket, and fleet shoes, which permitted him to dart around his big airy office—from his desk to a blackboard to a wall chart to a photograph of the Orion Nebula and back to the desk—talking and demonstrating and chalking up equations with a Brownian intensity and economy of movement. This is actually upper Broadway's second telescope, Dr. Thaddeus told us. The first one is seven blocks north, on the roof of a building at Columbia.



We asked if the New York sky isn't too light and smoggy and cluttered for this sort of long-distance viewing.

"Not at all," Dr. Thaddeus said. "It turns out that at short wavelengths New York City is a wonderful observatory. We work in the very high frequencies, at a wavelength of about a tenth of an inch. That's at the top of the radio band, where the atmosphere is transparent. So far, there's no commercial utilization to speak of—no microwave ovens or radio or radar. As far as we're concerned, the New York environment is as quiet as it was when Henry Hudson came up the river. We are bothered by clouds a little bit, but so are most astronomers. If we just throw away half of the weather here, it turns out that the other half is somewhat superior to the average time at the top of a mountain out West. The secret is that we're in the lee of a great continent. During the autumn and winter, cold, dry air comes down from Canada, from the area around Great Slave Lake. When we have these crisp, bright days here in the wintertime, the atmospheric conditions are wonderful for seeing. The signal does interact with water vapor, though. Radar, which is on a slightly lower frequency, can just barely slip through the clouds—that's why it's good for making weather maps. But we shut down from May to October—the good weather then isn't worth waiting for. The rest of the year, a hundred feet off Broadway is a dandy mid-latitude sea-level site."

The telescope, which is an exact replica of the one seven blocks north, is eventually going to be shipped to Chile, where it will act in concert with its Columbia twin. Dr. Thaddeus and his associates have been making a survey of the chemistry of the Milky Way, and much of that starry band is visible only from the Southern Hemisphere. "Arthur Eddington, quoting his fellow-astronomer Jacobus Kapteyn, said that trying to understand the galaxy from observations in the Northern Hemisphere is like a bird's trying to fly with one wing," Dr. Thaddeus said. "Also, cloning an instrument—duplicating it—is a very efficient thing. For these reasons, taking an exact copy of our first telescope to the Southern Hemisphere struck us as a good idea, and the National Science Foundation agreed." There was a look of triumph on Dr. Thaddeus's face. "It was after Reagan, but we got directly from the N.S.F. one point two million bucks," he said. This telescope will sit on the roof until sometime next year. "It will be debugged and checked out, and then, when it's really working"—Dr. Thaddeus paused dramatically—"the plan is that we'll take it apart and carry it. Not exactly in a suitcase but almost. Then we'll plug it in and hope it works."

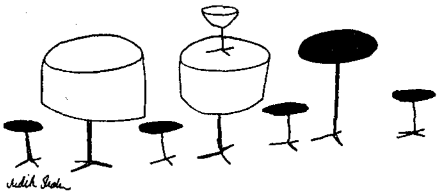
The telescope will help Dr. Thaddeus study nothing less than the chemistry of the universe. "We're doing the first survey of the galaxy—of the universe, really—for organic chemistry," he said. "It used to be thought that organic chemistry stopped about five miles above your telescope. Since 1945, astronomers have discovered what they call the violent universe—ionized matter pouring forth at nearly the speed of light from supernovas and quasars—side by side with the universe of the stars, which are fairly stable. What radio astronomers discovered, which flies right in the teeth of this theory, is that there's a third general state of matter—cold and serene—where the chemical bonding takes place. We've found great clouds of molecular gases, and it's in these clouds that the chemical bonds really take hold. So what we're doing with this telescope is studying the organic chemistry, finding out just how much of this exotic stuff there is. And what we're finding is that—contrary to expectations and predictions—a considerable part of the galaxy is chemical."

After all this, the telescope itself was something of a disappointment, to our nontechnical eye. It's a silvery disc four feet across with a hole in the middle where the receiver will go. At the time of our visit, the receiver was in a thousand pieces, scattered around the workroom of Dr. Thaddeus's research associate, a bearded young man named Richard Cohen. We did admire the way the telescope's dome rotated—it rumbled like an I.R.T. train coming into a station—but what we liked best, we have to admit, was a demonstration by Dr. Cohen of the properties of liquid nitrogen (nitrogen condenses at −350° Fahrenheit), which will be used to cool the receiver. He shot a little of the liquid into a Styrofoam cup from a compressed-air cannister and then turned the cup upside down a few feet above the linoleum floor. We saw a splash of liquid come out of the cup, but it evaporated into the merest wisp of smoke before it ever reached the floor.

Clusters

THE richest cluster in the United States is called Blue Blood Estates, and it's affluent/upper, suburban residential, predominantly white, with white-collar families with children, college grad and above, living in single-unit housing. It has a market rank of 1 on the "ZIP Quality," or Z.Q., scale. The largest cluster is Young Suburbia, with a profile like Blue Blood Estates' but a Z.Q. rank of 8, and it is followed closely in size by Bunker's Neighbors, with a Z.Q. rank of 12. Shotguns & Pickups, Big Fish/Small Pond, and Back Country Folks are three clusters with below-average Z.Q. ranks; lowest is Hard Scrabble, with a Z.Q. rank of 40.

According to Jonathan Robbin, a social scientist turned businessman, who invented these clusters, they are market-rating classifications based on the theory that "the demographic variables that define homogeneous neighborhoods are significantly correlated to resident consumer purchase patterns"—in other words, that "you are where you live." Mr. Robbin and his colleagues at the Claritas Corporation built the cluster model of the United States in three number-crunching steps. First, they sorted the 1970 United States Census data by Zip Code, noting a thousand variables for each of the nearly thirty-five thousand six hundred Codes. Second, they analyzed five hundred and thirty-five basic measures of Zip-neighborhood characteristics, which fall into five "domains," or groups (social class and affluence; family life cycle; mobility; ethnicity; housing style and degree of urbanization), and, in the process, discovered thirty-four key factors that account, in statistical terms, for eighty-seven per cent of the "variance between neighborhoods at each Zip level." Finally, they rated all the Zip Codes on each of the key factors, and instructed a computer, using all thirty-four scores simultaneously, to group the Zip Codes and the neighborhoods within them into distinct, homogeneous clusters. As a company report puts it, "each Zip was assigned to its nearest Cluster centroid in thirty-four-dimensional, statistical hyperspace."



We took this in on a visit to the main Claritas offices, which are in Virginia, right across the Potomac River from Washington. A map on the wall of Jonathan Robbin's office provided an example of how he has put the forty clusters to use. The map covered the blocks in Zip 10019 (between Forty-ninth and Fifty-ninth Streets, and Fifth and Twelfth Avenues, in Manhattan). Each neighborhood was marked in one of six colors, which flagged its cluster identity (Money & Brains, Urban Gold Coast, Bohemian Mix, Emergent Minorities, Dixie-Style Tenements, or Urban Renewal) and its potential for consumption (the Urban Gold Coast areas, southeast of Columbus Circle and on either side of Sixth Avenue, had the highest; Dixie-Style Tenements, just east of Twelfth Avenue and a few blocks south of Fifty-ninth Street, had the lowest). The Claritas map charted the blocks' potential for consumption of yogurt, so that, knowing the cluster of each block and the yogurt index of each cluster, a client interested in opening a yogurt store near Radio City could pick the best spot. With each of the United States Census's two hundred and seventeen thousand block-groups classified by cluster, Claritas can provide a similar map of any area in the country, for almost any product. Claritas also serves as a consultant on direct-mail advertising for magazines (*Field & Stream* does well in Shotguns & Pickups), door-to-door sampling, and other forms of pinpoint, or targeted, marketing.

Jonathan Robbin, a solidly built man in penny loafers, a baggy suit, and glasses with small tortoise-shell

PLEASE
KEEP OFF
THE
SNOW

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frames, beamed when we asked him how the Claritas system worked. Around him were shelves of books like "Clustering Algorithms" and "Mathematical Taxonomy," an Apple II Plus computer, and an open briefcase containing cluster printouts and a pocket calculator, along with a notepad from the Caracas Hilton—tools of the trade that the energetic Mr. Robbin has developed during twenty-nine years of applied social science. Before answering our question, he commented on his age ("I'm the kind of fifty-two *you are after working twelve hours a* day for too many years") and his company's income ("Let's just say it's a fat seven-figure number"), and, swivelling in an old wooden chair, gave us a tour of the machines that turn the Claritas data into graphs, charts, and maps. Then he described what he thinks the company has accomplished.

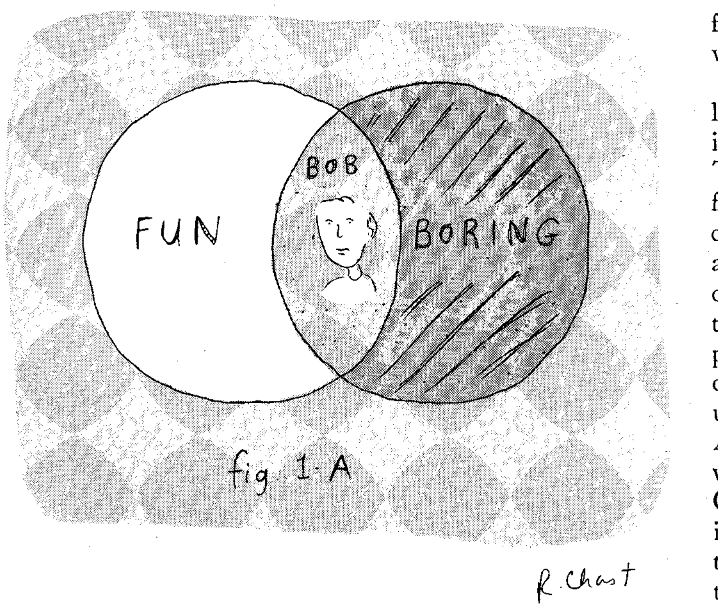
"The world's a cellular phenomenon, and you can look at it in different ways," he said. "Botanists parse the world in terms of taxonomy. In geodemography, we use a statistical process of pattern recognition to break the world into significant units, which are basically neighborhoods. What we've got is a one-hundred-per-cent idea of the United States. We study aggregates of areas to look at the life style of the people who live in them. Where you live, we've discovered, is the crucial issue in your social status, and it's beautiful to see data coming out of a computer to make the point. You can go to sleep in Fairfield, Connecticut, and wake up in Pasadena, California, but our system proves that, except for the palm trees, you're really in the same place."

Jonathan Robbin became fascinated by cluster analysis in the fifties, when he helped a geologist at Columbia University classify fossils and sediments from the Bahamian seabed according to salt content, temperature, and depth. Later, on assignment for the Office of Economic Opportunity during the Johnson Administration, Mr. Robbin found that "the federal system held a wealth of information at an aggregate level," and he used the data to draw a social profile of every county in the United States for O.E.O. He also began to work in earnest on a plan that eventually yielded the Claritas Clusters.

Now his company's daily affairs are handled by others, Mr. Robbin went on, so he has time to experiment with the clusters. He has explored the political uses of clusters, and has deals with two firms (one Democratic and one Republican) that use them in developing campaign strategy. "You know the basic constituencies in politics—blacks, veterans, businessmen, women?" he said. "They don't exist. The real interests are in the community. The true coalitions form according to life style. Now, if you took these facts to their extreme the result would be outrageous. You'd have political redlining. Some candidates might try to build a constituency of élites. The implications are tremendous. But the clusters portray reality, and we have to live with them."

His hand whirling, Mr. Robbin continued, "You get cluster-whipped doing this all the time. But this stuff is amazing, as an artifact of society and a triumph of engineering, if nothing else." He slid his chair forward, grabbed some papers from the desk, and said, "Look at this. Blue Blood Estates has the country's highest Z.Q. and *only point six per cent* of the people in the U.S., but that cluster holds sixty per cent of the dollar value of the country's corporate stock. People who live in the cluster take more than eight times as many international business trips as the national average. They give almost six times as much money to hospitals, and spend four times as many days playing tennis. And look what they don't do. They buy one-tenth the number of truck-mounted campers, because they can afford to stay in fancy hotels, and a third the number of forty-five-r.p.m. records. And they buy forty per cent less cough syrup, because they get their medicine from private doctors. Want to see the other end of the spectrum? In Hard Scrabble, they've got forty per cent more cats than the national average, because cats like mice, who like grain, which you can find in rural places; they don't have many burglar-alarm systems; and they buy a quarter again as many forty-five-r.p.m. records."

Jonathan Robbin stood up and spun his chair. "That's it," he concluded. "That's what we do."



Telecast

TELEVISING opera during a performance is an artistic gamble that requires large amounts of money, steel-nerved singers who can play to the cameras and the audience without shortchanging either one, and a director who combines technical skill and musical knowledge with a theatrical sense of story line. We arrived at these conclusions on a recent Saturday afternoon after watching Kirk Browning, a gifted and resourceful television director who specializes in musical events, prepare a telecast of the Metropolitan Opera's sumptuous new production of Puccini's "La Bohème" for an audience that was estimated at twenty million people. In recent years, television has begun to provide opera with a more intimate, cinematic point of view and with an enormous new public. The Met "Bohème," for example, was sent live by satellite to Europe and Chile and Venezuela that same afternoon and shown throughout the United States on tape the following Wednesday night.

Our first encounter with Mr. Browning, a lean, intense man with white hair and startling black eyebrows, took place one evening earlier in the week, in a large, boxlike television truck that was parked in a windy bay at the back of the Metropolitan Opera House. He met us at the door and showed us the electronic equipment that had been packed into a remarkably small space: a director's console at one end, bristling with television monitors and switching equipment, and a video-equalizing room at the other end, which enabled technicians to shade and paint the shots selected by the director so that the colors matched. Sound, he told us, was mixed separately, in an audio booth inside the house, and English subtitles were added from a Chyron machine in another truck. We knew that Mr. Browning was about to tape a "Bohème" performance as a dress rehearsal for the telecast, and we asked how he had prepared for that project.

"When it's a new production, stage action is often difficult to pin down, because it isn't set until quite late," he said. "I watched rehearsals and made a single reference tape of the piano dress rehearsal on the house camera from the center of the auditorium. Using this, I could pretty well break down the opera into picture sequences that will be photographed from the various camera angles that I know exist in the house. Tonight, I'm working from a rough shooting script—that's a typed libretto with camera shots written next to the dialogue."

"Where are your cameras?" we asked.

"Normally, we can cover any stage action with six cameras," Mr. Browning replied. "Four of them are stationed along the front of the auditorium—two at the outside corners of the orchestra pit and two shooting up from the center aisles. Two others shoot *down* at the stage from parterre boxes on opposite sides of the house. For this production, Franco Zeffirelli, the director of the opera, wanted to see certain long shots of the center of the stage, so we added a seventh camera, in a center box, which can zoom in on the action or pull back slowly for a long shot of the entire stage. Then I added a safety camera, in a box on the left, which covers the whole show and can take over if I should have trouble."

"What did you learn from the reference tape?" we asked.

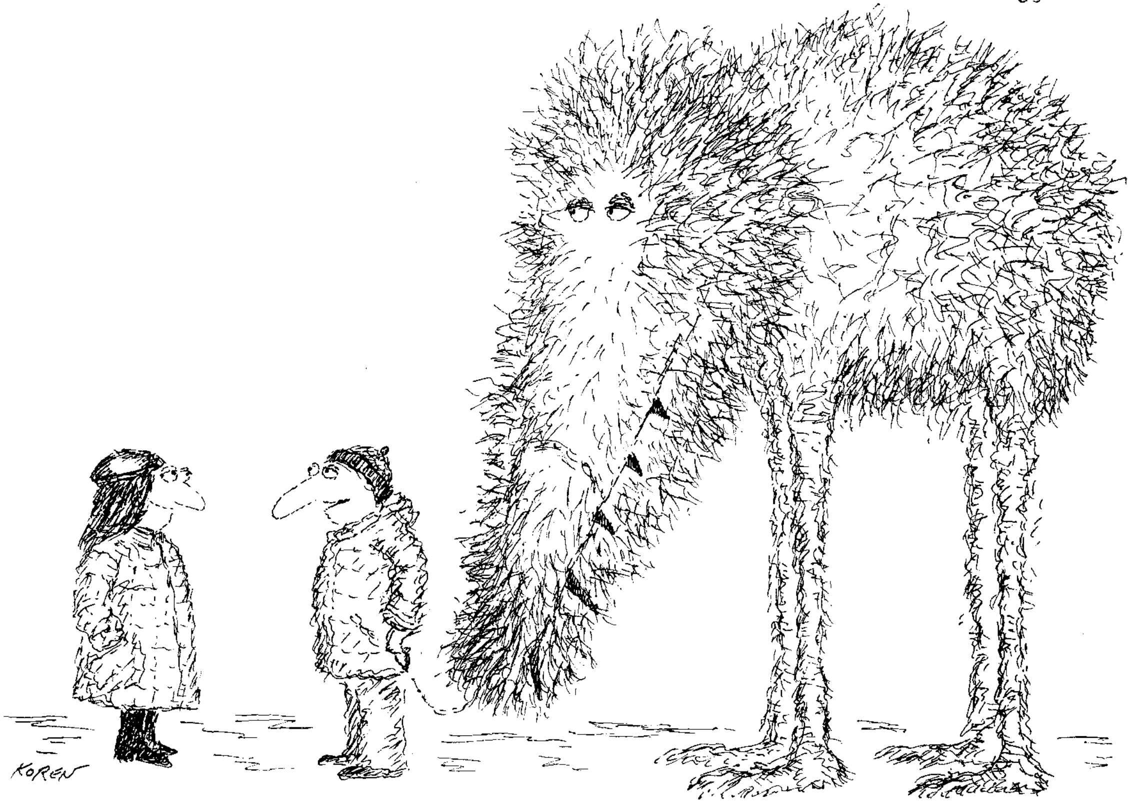
"I cleaned up some sight lines," said Mr. Browning. "I'm going to shoot Teresa Stratas, our Mimì, from a higher angle, because it's more flattering, and I'll use my two low cameras at the front of the house more than I'd planned, because I've discovered that they can shoot up over the Paris rooftops in Acts I and IV to get some very interesting material. Gil Wechsler, the lighting designer, has promised to increase the lighting in the café and soften it up a bit in that wonderful Act III snow scene, and I'm going to pull back and use the center camera for long shots whenever I have a blessed moment. In television, it's hard to make general mood-setting shots pay off, because the camera is gratuitous until you get into character relationships and specific storytelling. The major problem is the Café Momus scene, in Act II. I have to tell a very fast-moving story in specific pictures—the cameras must pick out the main characters as each one sings, so it's going to be tough to catch the chemistry of the environment, the ebb and flow of Parisian life that goes on around them."

Air time approached, and we folded ourself into a corner of the truck as Mr. Browning put on a headset and a pair of silver-rimmed glasses and sat down at a desk facing a wall of television monitors. There was a large color set at the top, which transmitted the picture that was being taped. Below it, eight smaller, black-and-white monitors showed what each of the cameras was photographing. On Mr. Browning's left sat his associate director, a tall, blond man named Alan Skog, who lined up each camera in advance, to make sure that a shot was ready when Mr. Browning called for it. On his right sat the technical director, Rizz Augugliaro, pressing buttons and switches that transferred the picture from camera to camera. As the curtain rose on two bohemians—Rodolfo and Marcello—in their freezing attic, Mr. Browning began to prowl across the set with his cameras, panning left from a smoking chimney with a sidewise hand movement, signalling a dissolve from a balcony to the interior of the attic with a circular motion of his right arm, cutting between waist shots of Rodolfo and Marcello with sharp finger snaps. As the act progressed—Mimì arrived with her candle, and Rodolfo fell instantly in love—we began to get a sense of Mr. Browning's style. He usually began a sequence with several rapid medium shots ("Camera 5 on Rodolfo as he opens the door; Camera 4 on Mimì in the doorway") and then moved in for more leisurely closeups during the arias ("Tighten up on Mimì when she sits in the chair"), changing cameras at the end of a musical phrase.

The next day, Mr. Browning told us that he was planning to stay up most of the night working with David Kneuss, the assistant stage director (Zeffirelli was in Europe), to restructure the camera shots. "What I have to do is to balance the story line for an audience that is seeing 'Bohème' for the first time," he said. "I've got to find a way to make a sequence of shots that gives the proper weight to the various relationships that are going on in the café—Mimì with Rodolfo and his friends; Marcello with Musetta, his former love; Musetta with Alcindoro, her elderly lover—without being disorienting. Basically, I'm going to have to decide how *I* see these relationships, and stick with it."

Two days later, when we arrived to watch the live telecast, Mr. Browning told us that he had completely reorganized the café scene. "I've reduced the number of cuts—they were disorienting—and I've put in as many long shots of the entire stage as I can find room for," he said. "Camera 2 is having a hard time locating Mimì and Rodolfo at the very beginning, because they step suddenly out of the crowd to sing their first lines. So I've told him to focus on Marcello, who *is* visible, and to pan left. We also have to shoot a foot higher than we did at the dress, because the stage wagons—those enormous platforms that slide in carrying scenery—are stuck and won't sink to stage level."

The telecast, which began in an atmosphere electric with tension, went well, despite a brief blackout of Camera 6 caused by a malfunctioning headset. The main characters in the Café Momus were outlined clearly against a larger tapestry of Parisian life; the haunting snow-drenched meeting between Rodolfo and Mimì took place beneath warmer light and smaller snowflakes; and Mimì's death, in the squalid garret, was caught in a series of agonizing closeups by three cameras, one of which followed her arm as it fell, lifeless, to the side of the bed. As the curtain came down, Mr. Browning pushed back his chair and mopped his eyes. "I haven't cried like this since I did 'Suor Angelica' in 1953," he said. "You know, when we began, three hours ago, I wasn't sure whether what I'd come up with was a solution or an expedient, but now that I see it working on camera I think maybe it *is* a solution."



"He's a very fussy eater."

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TALKING

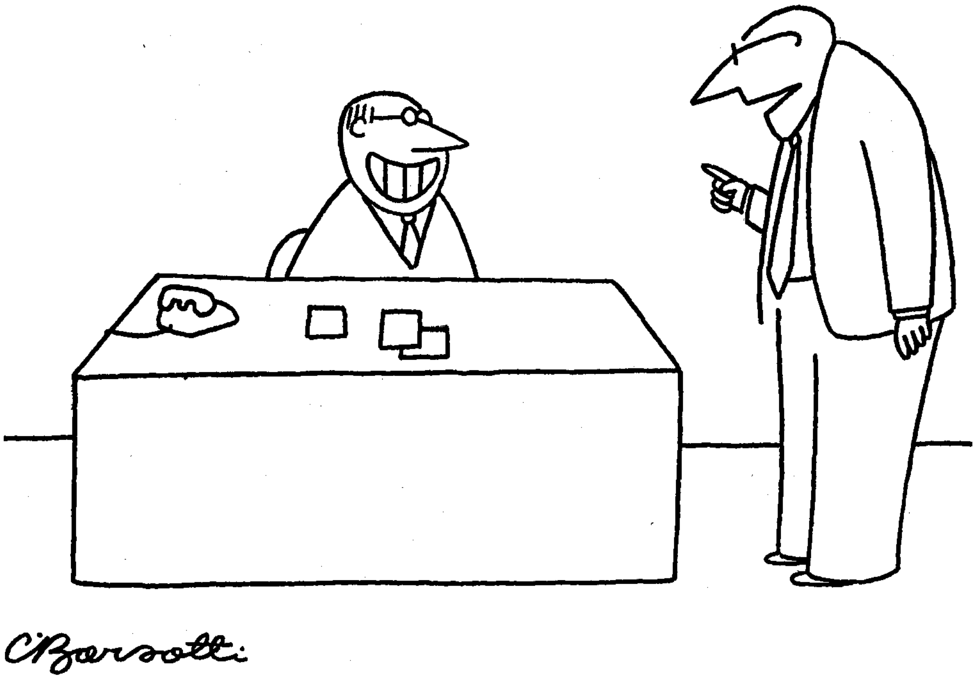
ETHEL MATTICE

She's not like most of the other people of America whose stories I've listened to, the soft-spoken folk with voices as faded and anonymous as their lives. Her voice is a bagpipe practicing to be a foghorn. The knickknacks on her mantelpiece jump and dance whenever she talks; I retreat out into the hall and just sort of edge the mike into the parlor doorway. This is what she says:

I STARTED out in the Chin Musicians that was the kids' talking society ages about five to ten and oh goodness I don't think I could have been more than seven myself it was the year of the Columbian Exposition when I entered my first talking bee they had these talking bees out where I grew up in the Dakota Territory put on by the so-called talking societies every little town had its talking society there was let me think the Stephen Douglas and the William Jennings Bryan and of course the Garibaldis that was another one very snooty if you were in the Garibaldis you wore a big red sash and they even used those whatchamacallits those spray things yes atomizers that's the word to moisten their tonsils very la-di-da we used to say and wouldn't you know it one of the Garibaldis went on into the opera. (*Gasps*)

There was just this terrific emphasis on talking not just in my family in every family this came out of those long prairie winters out of the boredom of it being cooped up for months and months in your little sod hut talking was about the only way we knew to beat the blues things really closed in after Buffalo Day now Buffalo Day nobody remembers anymore but it was that day around the end of November when the wind finally got so strong it even blew the buffalo across the prairie I distinctly remember the night the buffalo hit our hut oh my what a commotion it busted Mama's ormolu vase into a million pieces but as I say talking real loud was the only way to drown out the howling of that awful wind. (*Gasps*)

So eventually somebody it was a farmer up Dilemma Falls way who claimed credit on the other hand he also said he invented the dog that man was not altogether reliable if you know what I mean but somebody decided to make it a public competition to buck up the spirits there was talking fastest and of course my specialty talking loudest and longest without taking a breath and then the novelty ones like talking while being tickled and talking with a mouthful of feathers for some reason only the Blackfoot Indians ever did that well and then talking in time with a grandfather clock we called it clocktalk and if you ask me clocktalk was even more boring than silence that was the specialty of a man name of Crowder he called himself the Human Metronome I'll tell you that man never got invited to dinner at the same house twice. (*Gasps*)



"*Harbrucker, you're upsetting the rest of the staff.*"

My brother Boone he left and went up Athabasca way the first day of spring after I took up the talking he was a patient soul but his nerves couldn't take the noise but my parents they did nothing but encourage me after dinner they'd go stand outside in the snow it got down to thirty below in January mind you just so I could practice what a grand thing it was I got to the All County finals and by age twelve there I was West Dakota Juvenile Champion in my category of talking loudest and longest without taking a breath and guess what I won I won a megaphone imagine that a megaphone. (*Gasps*)

DUANE DIX

He keeps passing in and out of microphone range as he loops and swoops his skateboard around the living room, a figure skater gliding on cut pile. He just misses the coffee table and just misses the sleeping Irish setter. He just misses every object in the room, except the interviewer's casually outflung leg.

THERE was this one time I remember, this was real feeble, man, it was moron city . . . . . . my buddy Gary, from school? And some other guy from Evanston or someplace, a real konk . . . . this real sticky gray kind of tape, kind of industrial tape off a truck or something. Real retrograde, man . . . . . . they both go and seal up their whole face and mouth with this stuff, you know, this tape . . . . and they both wrap it around and around their heads like these mummies. It was so ultra-wonk, man . . . double depressing, you know, because . . . . like they couldn't talk or say nothing . . . . but like nobody even *noticed* and . . . . . hey, man, get out of my . . . . (*Inaudible*)

AL GUMBINER, JR.

It is Mrs. Gumbiner, spry and bright-eyed, who meets me at the door and steers me through a thicket of hat racks to the sofa. She has barely begun recalling her career as a hat-check girl at the Brown Derby forty years ago when a panama hat sails into the room, immediately followed by her husband.

MY professional name was Count Fedora, the Hungarian Whippoorwill. Liked the ring of it. Is that thing turned on? I made my living for fifty-five years by standing up on the stage and talking through my hat. Singing and whistling too, of course. Testing, testing, one two three, isn't that what you say? A nice living too, while it lasted.

Well now don't go confusing what I did with ventriloquism, because the one's a trick but the talking through your hat, that's an art. Or used to be, before the radio come in and killed it off. That's too small to be a microphone! You don't say. Now, nobody'd pay twenty-five cents to see a fellow talk through his hat once they had voices and music over the radio for free.

What's that hum? That hum coming out of that machine? But it used to be big. Got a standing ovation at the Gayety in Detroit once, reciting James Whitcomb Riley. Can I pick that thing up? Where's the wires? Got no wires? Now isn't that something. I made one of those Edison talking records once, came out on what you called a cylinder. This was, oh, way back when. "I Was Seeing Nellie Home." I sang "I Was Seeing Nellie Home." The record never got put out. They said it sounded like I was singing through my hat. What's that needle jumping around like that for? Well I said, I *was* singing through my hat. That was the whole damn idea! Now, what happens when you press this red

TUNDA VIBOR

Our conversation is all but submerged by the sound of the El trains as they circle the Loop, and I struggle to catch his thickly accented words over the rising and falling clickety-clack. Then I realize that the source of the noise is inside the room, in the hummingbird blur of his shoes making war on the floor.

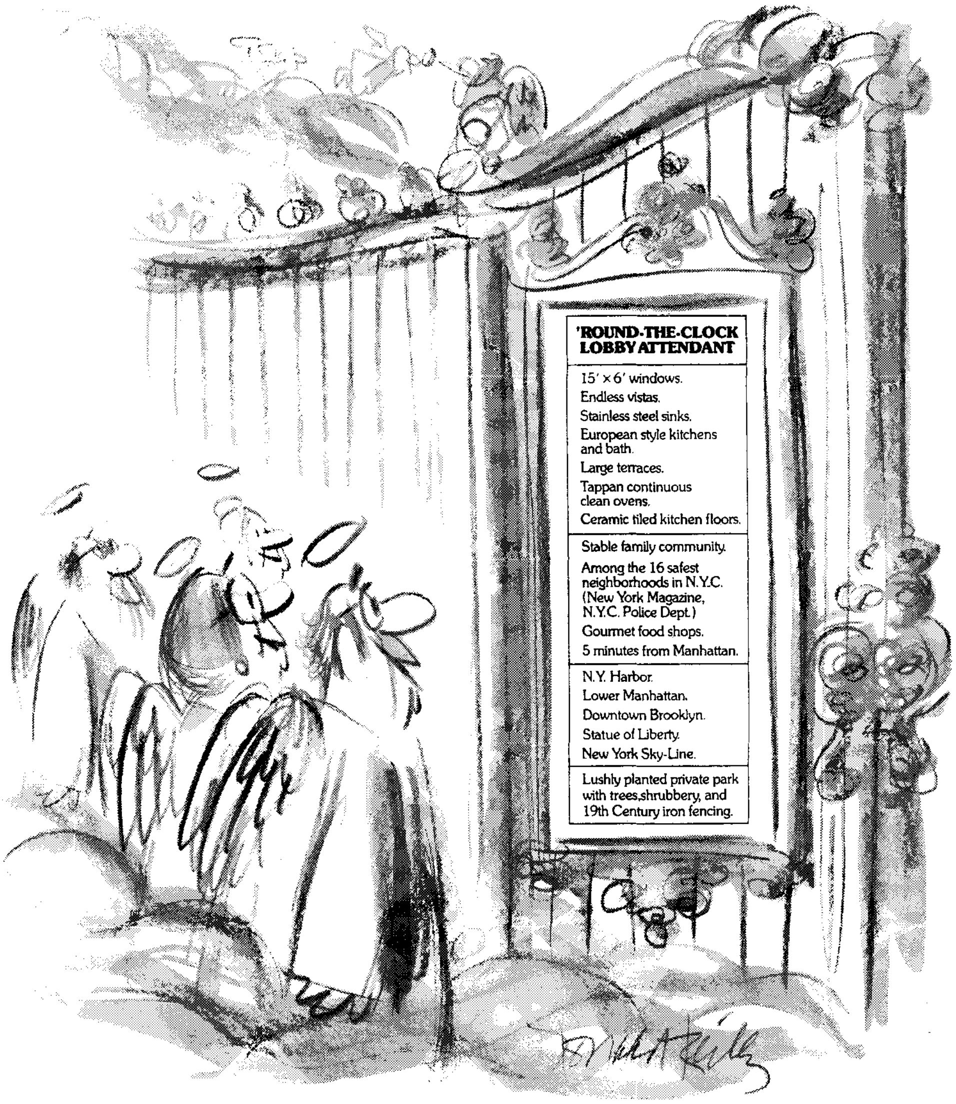
TALKING was illegal back in the old country where all my people came from. They had anything to say, they tapped it out on the floor with their shoe or slipper. Or even their stocking feet, if they knew the Buzda were around, the secret police.

No Buzda around here, of course! (*Laughs*) But see how all black and dimpled the floor is over there, by that chair. That was Grandma Vibor's chair for fifty-three years after she and Grandpa Zam came over. Fifty-three years of shoe-talking.

Her generation never did adjust to the American way of talk. It wasn't that they wouldn't, they just couldn't. My, I'd like a dollar bill for every carpet store that opened up and shut right down again in this here neighborhood! (*Laughs*) Our people got together every year on Victuallers' Day and you'd never guess where they always held the party. A bowling alley! (*Laughs*) The hardwood floor, you see. A shoe-talker's paradise! (*Laughs*) But my own favorite shoe-talking story happened on the dance floor. Also hardwood. Over at the old Tangodrome on Runciman. Long gone now, of course, but very fancy in its day. Well, Grandpa Zam (*Laughs*), he thought he heard another fellow shoe-talking something (*Laughs*) off-color (*Laughs*) in Grandma Vibor's presence and so he hauls off and socks him! (*Laughs*) Right there on the dance floor! All the poor guy was doing was the tango! (*Laughs*)

Now here I am, back living in Grandpa Zam's house. Just about all the old shoe-talking folks are gone from the neighborhood, of course. But this oak floor is still good as new, and I still have this nice wood-heeled pair of shoes. Sometimes when I'm all by myself, which is most of the time, it all comes back and before you know it I get my right foot talking with my left. Like this. (*Taps*) Silly damn thing to do. (*Laughs*) But like I say, once you learn it, you never forget. (*Laughs, taps, laughs, taps*)

—BRUCE McCALL


'ROUND-THE-CLOCK LOBBY ATTENDANT
15' × 6' windows.
Endless vistas.
Stainless steel sinks.
European style kitchens and bath.
Large terraces.
Tappan continuous clean ovens.
Ceramic tiled kitchen floors.
Stable family community.
Among the 16 safest neighborhoods in N.Y.C. (New York Magazine, N.Y.C. Police Dept.)
Gourmet food shops.
5 minutes from Manhattan.
N.Y. Harbor.
Lower Manhattan.
Downtown Brooklyn.
Statue of Liberty.
New York Sky-Line.
Lushly planted private park with trees,shrubbery, and 19th Century iron fencing.

"Wow! This really *is* *Heaven!"*

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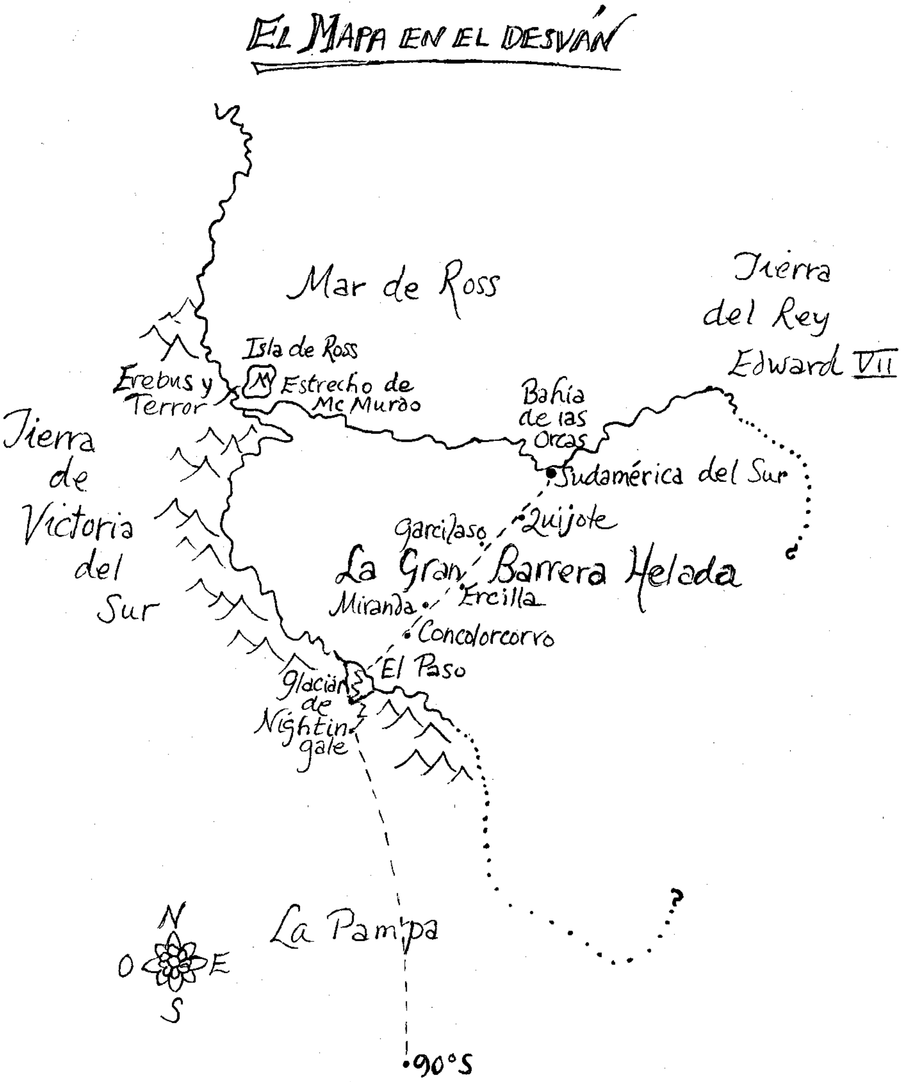
When he took over the Interior Department, Watt said, he found the pendulum "was out in left field, and I had to bring that pendulum down into the mainstream of the environmental movement. And we've been successful in doing that."
—*San Francisco Chronicle.*

He can certainly turn a phrase, that Watt.

SUR

A SUMMARY REPORT OF THE YELCHO EXPEDITION TO THE ANTARCTIC, 1909-10



ALTHOUGH I have no intention of publishing this report, I think it would be nice if a grandchild of mine, or somebody's grandchild, happened to find it some day; so I shall keep it in the leather trunk in the attic, along with Rosita's christening dress and Juanito's silver rattle and my wedding shoes and finneskos.

The first requisite for mounting an expedition—money—is normally the hardest to come by. I grieve that even in a report destined for a trunk in the attic of a house in a very quiet suburb of Lima I dare not write the name of the generous benefactor, the great soul without whose unstinting liberality the Yelcho Expedition would never have been more than the idlest excursion into daydream. That our equipment was the best and most modern—that our provisions were plentiful and fine—that a ship of the Chilean government, with her brave officers and gallant crew, was twice sent halfway round the world for our convenience: all this is due to that benefactor whose name, alas!, I must not say, but whose happiest debtor I shall be till death.

When I was little more than a child, my imagination was caught by a newspaper account of the voyage of the Belgica, which, sailing south from Tierra del Fuego, was beset by ice in the Bellingshausen Sea and drifted a whole year with the floe, the men aboard her suffering a great deal from want of food and from the terror of the unending winter darkness. I read and reread that account, and later followed with excitement the reports of the rescue of Dr. Nordenskjöld from the South Shetland Islands by the dashing Captain Irizar of the Uruguay, and the adventures of the Scotia in the Weddell Sea. But all these exploits were to me but forerunners of the British National Antarctic Expedition of 1901-04, in the Discovery, and the wonderful account of that expedition by Captain Scott. This book, which I ordered from London and reread a thousand times, filled me with longing to see with my own eyes that strange continent, last Thule of the South, which lies on our maps and globes like a white cloud, a void, fringed here and there with scraps of coastline, dubious capes, supposititious islands, headlands that may or may not be there: Antarctica. And the desire was as pure as the polar snows: to go, to see—no more, no less. I deeply respect the scientific accomplishments of Captain Scott's expedition, and have read with passionate interest the findings of physicists, meteorologists, biologists, etc.; but having had no training in any science, nor any opportunity for such training, my ignorance obliged me to forgo any thought of adding to the body of scientific knowledge concerning Antarctica, and the same is true for all the members of my expedition. It seems a pity; but there was nothing we could do about it. Our goal was limited to observation and exploration. We hoped to go a little farther, perhaps, and see a little more; if not, simply to go and to see. A simple ambition, I think, and essentially a modest one.

Yet it would have remained less than an ambition, no more than a longing, but for the support and encouragement of my dear cousin and friend Juana ——. (I use no surnames, lest this report fall into strangers' hands at last, and embarrassment or unpleasant notoriety thus be brought upon unsuspecting husbands, sons, etc.) I had lent Juana my copy of "The Voyage of the 'Discovery,' " and it was she who, as we strolled beneath our parasols across the Plaza de Armas after Mass one Sunday in 1908, said, "Well, if Captain Scott can do it, why can't we?"

It was Juana who proposed that we write Carlota —— in Valparaíso. Through Carlota we met our benefactor, and so obtained our money, our ship, and even the plausible pretext of going on retreat in a Bolivian convent, which some of us were forced to employ (while the rest of us said we were going to Paris for the winter season). And it was my Juana who in the darkest moments remained resolute, unshaken in her determination to achieve our goal.

And there were dark moments, especially in the spring of 1909—times when I did not see how the Expedition would ever become more than a quarter ton of pemmican gone to waste and a lifelong regret. It was so very hard to gather our expeditionary force together! So few of those we asked even knew what we were talking about—so many thought we were mad, or wicked, or both! And of those few who shared our folly, still fewer were able, when it came to the point, to leave their daily duties and commit themselves to a voyage of at least six months, attended with not inconsiderable uncertainty and danger. An ailing parent; an anxious husband beset by business cares; a child at home with only ignorant or incompetent servants to look after it: these are not responsibilities lightly to be set aside. And those who wished to evade such claims were not the companions we wanted in hard work, risk, and privation.

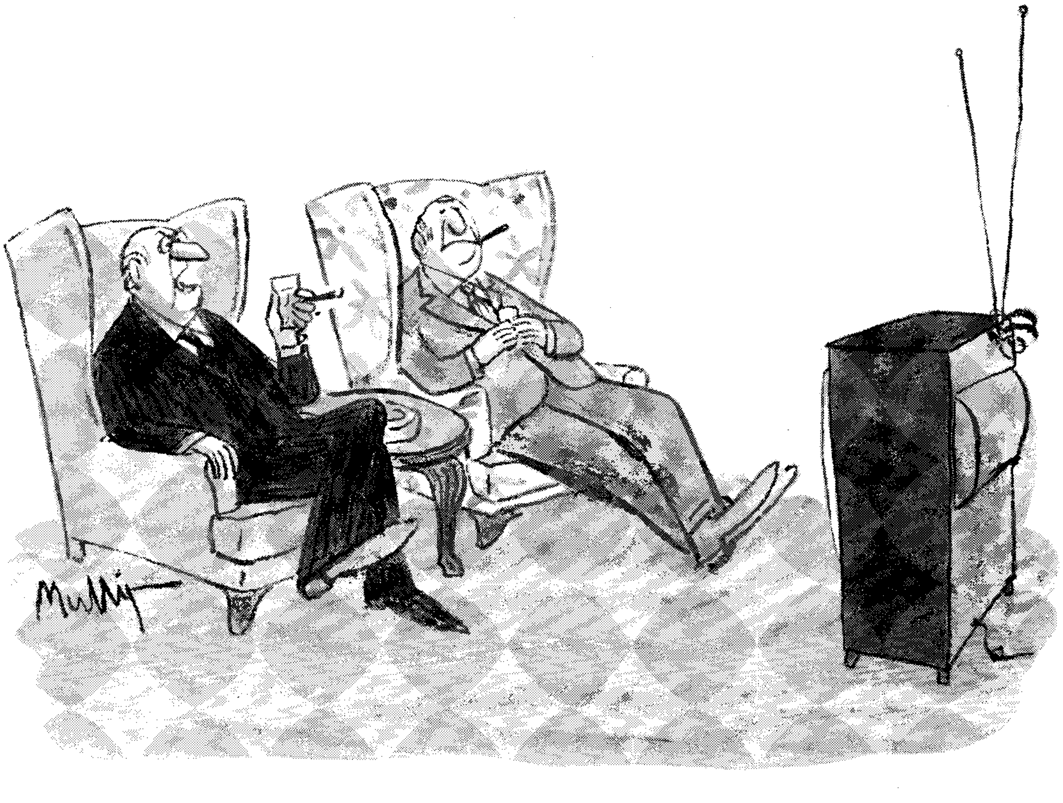
But since success crowned our efforts, why dwell on the setbacks and delays, or the wretched contrivances and downright lies that we all had to employ? I look back with regret only to those friends who wished to come with us but could not, by any contrivance, get free—those we had to leave behind to a life without danger, without uncertainty, without hope.

On the seventeenth of August, 1909, in Punta Arenas, Chile, all the members of the Expedition met for the first time: Juana and I, the two Peruvians; from Argentina, Zoe, Berta, and Teresa; and our Chileans, Carlota and her friends Eva, Pepita, and Dolores. At the last moment I had received word that María's husband, in Quito, was ill and she must stay to nurse him, so we were nine, not ten. Indeed, we had resigned ourselves to being but eight when, just as night fell, the indomitable Zoe arrived in a tiny pirogue manned by Indians, her yacht having sprung a leak just as it entered the Straits of Magellan.

That night before we sailed we began to get to know one another, and we agreed, as we enjoyed our abominable supper in the abominable seaport inn of Punta Arenas, that if a situation arose of such urgent danger that one voice must be obeyed without present question, the unenviable honor of speaking with that voice should fall first upon myself; if I were incapacitated, upon Carlota; if she, then upon Berta. We three were then toasted as "Supreme Inca," "La Araucana," and "The Third Mate," amid a lot of laughter and cheering. As it came out, to my very great pleasure and relief, my qualities as a "leader" were never tested; the nine of us worked things out amongst us from beginning to end without any orders being given by anybody, and only two or three times with recourse to a vote by voice or show of hands. To be sure, we argued a good deal. But then, we had time to argue. And one way or another the arguments always ended up in a decision, upon which action could be taken. Usually at least one person grumbled about the decision, sometimes bitterly. But what is life without grumbling and the occasional opportunity to say "I told you so"? How could one bear housework, or looking after babies, let alone the rigors of sledgehauling in Antarctica, without grumbling? Officers—as we came to understand aboard the Yelcho—are forbidden to grumble; but we nine were, and are, by birth and upbringing, unequivocally and irrevocably, all crew.

THOUGH our shortest course to the southern continent, and that originally urged upon us by the captain of our good ship, was to the South Shetlands and the Bellingshausen Sea, or else by the South Orkneys into the Weddell Sea, we planned to sail west to the Ross Sea, which Captain Scott had explored and described, and from which the brave Ernest Shackleton had returned only the previous autumn. More was known about this region than any other portion of the coast of Antarctica, and though that more was not much, yet it served as some insurance of the safety of the ship, which we felt we had no right to imperil. Captain Pardo had fully agreed with us after studying the charts and our planned itinerary; and so it was westward that we took our course out of the Straits next morning.

Our journey half round the globe was attended by fortune. The little Yelcho steamed cheerily along through gale and gleam, climbing up



"Personally, I'd feel a hell of a lot better if Reagan stopped reminding us that for years he was a union man."

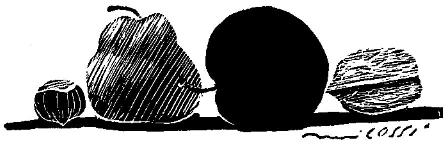
and down those seas of the Southern Ocean that run unbroken round the world. Juana, who had fought bulls and the far more dangerous cows on her family's *estancia*, called the ship *la vaca valiente*, because she always returned to the charge. Once we got over being seasick, we all enjoyed the sea voyage, though oppressed at times by the kindly but officious protectiveness of the captain and his officers, who felt that we were only "safe" when huddled up in the three tiny cabins that they had chivalrously vacated for our use.

We saw our first iceberg much farther south than we had looked for it, and saluted it with Veuve Clicquot at dinner. The next day we entered the ice pack, the belt of floes and bergs broken loose from the land ice and winter-frozen seas of Antarctica which drifts northward in the spring. Fortune still smiled on us: our little steamer, incapable, with her unreinforced metal hull, of forcing a way into the ice, picked her way from lane to lane without hesitation, and on the third day we were through the pack, in which ships have sometimes struggled for weeks and been obliged to turn back at last. Ahead of us now lay the dark-gray waters of the Ross Sea, and beyond that, on the horizon, the remote glimmer, the cloud-reflected whiteness of the Great Ice Barrier.

Entering the Ross Sea a little east of Longitude West 160°, we came in sight of the Barrier at the place where Captain Scott's party, finding a bight in the vast wall of ice, had gone ashore and sent up their hydrogen-gas balloon for reconnaissance and photography. The towering face of the Barrier, its sheer cliffs and azure and violet waterworn caves, all were as described, but the location had changed: instead of a narrow bight, there was a considerable bay, full of the beautiful and terrific orca whales playing and spouting in the sunshine of that brilliant southern spring.

Evidently masses of ice many acres in extent had broken away from the Barrier (which—at least for most of its vast extent—does not rest on land but floats on water) since the Discovery's passage in 1902. This put our plan to set up camp on the Barrier itself in a new light; and while we were discussing alternatives, we asked Captain Pardo to take the ship west along the Barrier face toward Ross Island and McMurdo Sound. As the sea was clear of ice and quite calm, he was happy to do so and, when we sighted the smoke plume of Mt. Erebus, to share in our celebration—another half case of Veuve Clicquot.

The Yelcho anchored in Arrival Bay, and we went ashore in the ship boat. I cannot describe my emotio when I set foot on the earth, on th earth, the barren, cold gravel at t foot of the long volcanic slope. I fe elation, impatience, gratitude, awe, f miliarity. I felt that I was home last. Eight Adélie penguins immed ately came to greet us with many excl mations of interest not unmixed wit disapproval. "Where on earth ha you been? What took you so long



HIS LAST CASE

To solve the recent brutal bombings
they summoned Inspector Nayland Smith
out of retirement. For twenty-five years
he had been cultivating roses in an out-of-the-way shire,
leaving his old exploits to be whispered into myth

by those who remembered the poisoned earrings
of the Duchess of Lancashire, or those peculiar cakes
into which a royal personage's evil Afghan chef
had mixed mind-destroying drugs. "Smith, for all of our sakes,
you must return to duty," the telegram read,

and the old man obeyed. Back in his dark office,
in a closet to which he alone had kept the key,
he found his black trunk full of multiple disguises,
which he donned one after the other, cannily,
as he worked his patient way into the terrorist cells

like a subtle illness. He was gunrunner one week,
crooked financier the next, renegade priest the third,
infiltrating craftily the innermost councils
of the People's Select Committee for the Glorious Revolution
until he had identified each hidden enemy.

A year passed. The stage was set—
the ringleaders converging on a mansion in Belgravia,
which Smith had wired in secret. Across the way,
he watched sardonically from a shaded window,
waiting for his dozen fish to swim into his net.

It had just stopped raining. The cool, quiet street
glistened with moisture as a cab whirled by
and two yellow-slickered children moved with hurrying feet
down the deserted pavement. They laughed in lilting tones
and Smith, for one moment, felt betrayed and alone . . .

It was time. He gave the signal. "Show no mercy," he said,
"for the killers have shown none . . ." His men took heed,
and when their work was finished the Committee was defunct.
Remained only the obliteration of each treacherous cell,
the gathering in of accomplices and packing them off to jail,

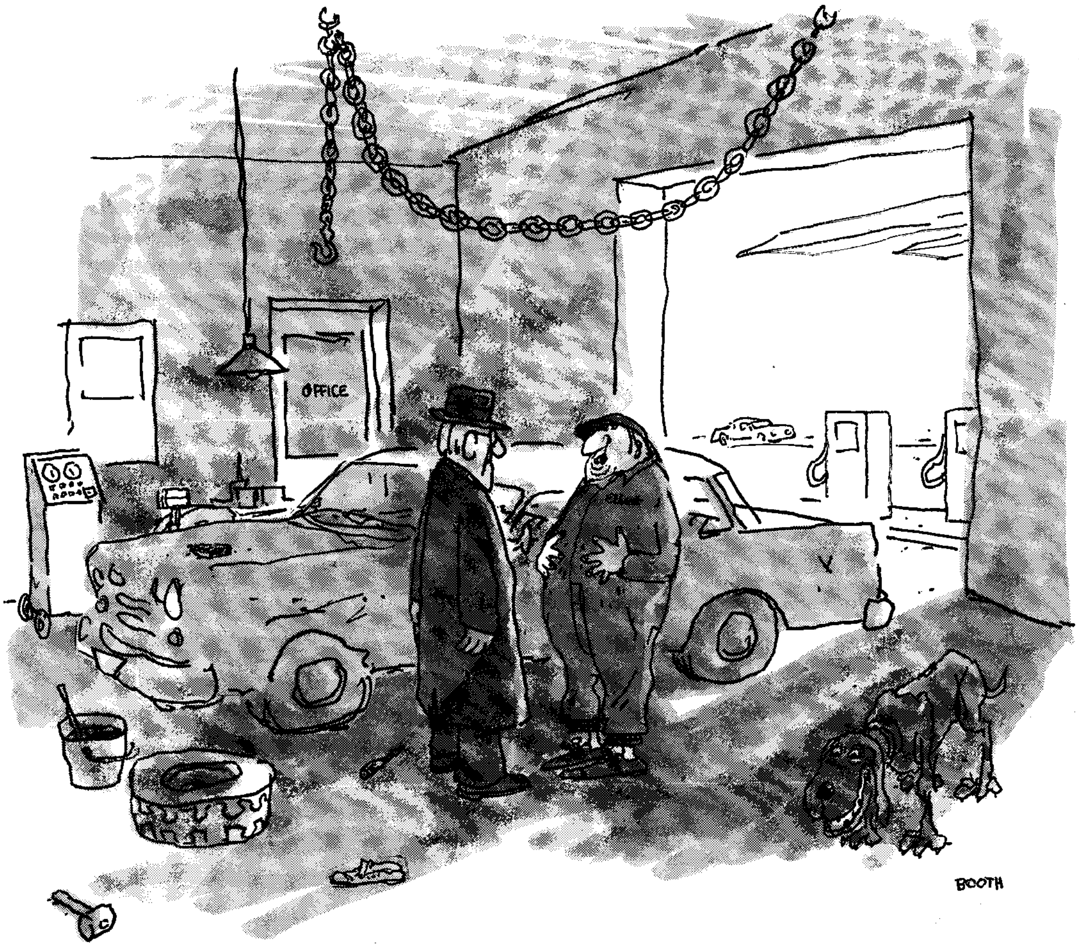
and another brilliant victory was proclaimed by the press!
Smith received distinguished honors from a grateful Crown
and went back into retirement at the height of his renown—
but is said to have confided to one or two close friends
that he'll not return to duty when the bombing next begins.

—FREDERICK MORGAN

• •

The Hut is around this way. Please come this way. Mind the rocks!" They insisted on our going to visit Hut Point, where the large structure built by Captain Scott's party stood, looking just as in the photographs and drawings that illustrate his book. The area about it, however, was disgusting—a kind of graveyard of seal skins, seal bones, penguin bones, and rubbish, presided over by the mad, screaming skua gulls. Our escorts waddled past the slaughterhouse in all tranquillity, and one showed me personally to the door, though it would not go in.

The interior of the hut was less offensive but very dreary. Boxes of supplies had been stacked up into a kind of room within the room; it did not look as I had imagined it when the Discovery party put on their melodramas and minstrel shows in the long winter night. (Much later, we learned that Sir Ernest had rearranged it a good deal when he was there just a year before us.) It was dirty, and had about it a mean disorder. A pound tin of tea was standing open. Empty meat tins lay about; biscuits were spilled on the floor; a lot of dog turds were underfoot—frozen, of course, but not a great deal improved by that. No doubt the last occupants had had to leave in a hurry, perhaps even in a blizzard. All the same, they could have closed the tea tin. But housekeeping, the art of the infinite, is no game for amateurs.



"If I were a surgeon, Mr. Ferguson, which I ain't, and your car was my patient, which it ain't—except that it is, in a funny sort of way; that is, if you want to look at it like that; you know what I mean—and you was her husband, I'd have to say, 'Sir, your wife is going to need a valve job.'"

• •

Teresa proposed that we use the hut as our camp. Zoe counterproposed that we set fire to it. We finally shut the door and left it as we had found it. The penguins appeared to approve, and cheered us all the way to the boat.

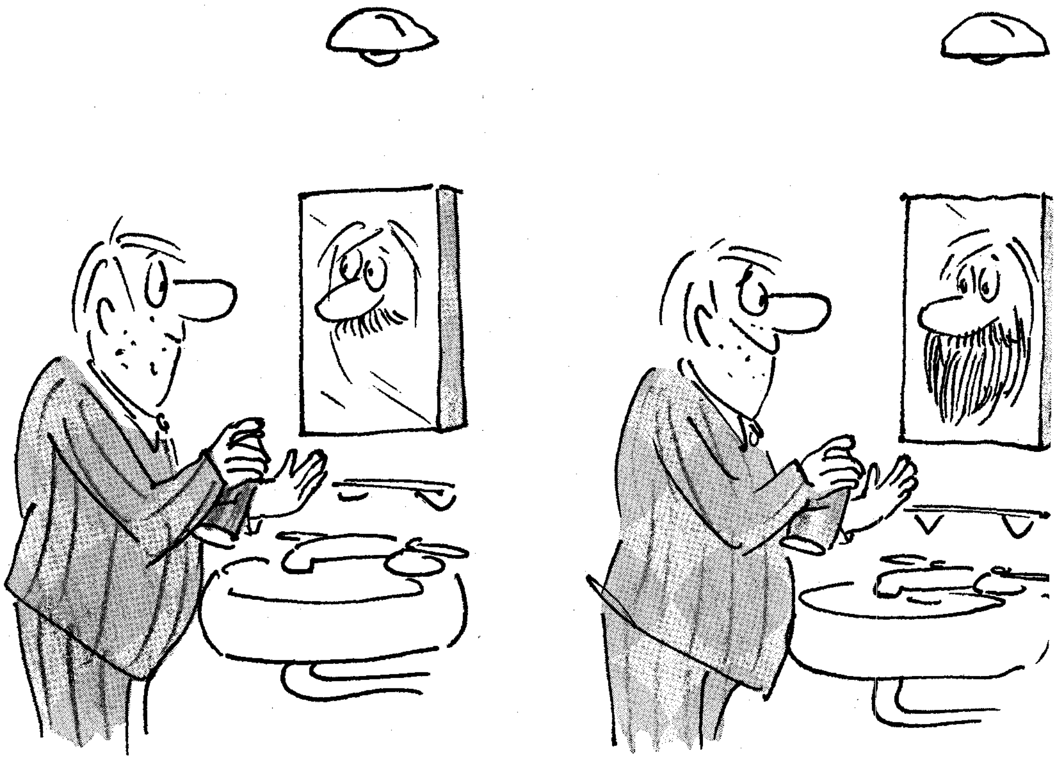
McMurdo Sound was free of ice, and Captain Pardo now proposed to take us off Ross Island and across to Victoria Land, where we might camp at the foot of the Western Mountains, on dry and solid earth. But those mountains, with their storm-darkened peaks and hanging cirques and glaciers, looked as awful as Captain Scott had found them on his western journey, and none of us felt much inclined to seek shelter among them.

Aboard the ship that night we decided to go back and set up our base as we had originally planned, on the Barrier itself. For all available reports indicated that the clear way south was across the level Barrier surface until one could ascend one of the confluent glaciers to the high plateau that appears to form the whole interior of the continent. Captain Pardo argued strongly against this plan, asking what would become of us if the Barrier "calved"—if our particular acre of ice broke away and started to drift northward. "Well," said Zoe, "then you won't have to come so far to meet us." But he was so persuasive on this theme that he persuaded himself into leaving one of the Yelcho's boats with us when we camped, as a means of escape. We found it useful for fishing, later on.

My first steps on Antarctic soil, my only visit to Ross Island, had not been pleasure unalloyed. I thought of the words of the English poet,

> Though every prospect pleases,
> And only Man is vile.

But then, the backside of heroism is often rather sad; women and servants know that. They know also that the heroism may be no less real for that. But achievement is smaller than men think. What is large is the sky, the earth, the sea, the soul. I looked back as the ship sailed east again that evening. We were well into September now, with eight hours or more of daylight. The spring sunset lingered on



the twelve-thousand-foot peak of Erebus and shone rosy-gold on her long plume of steam. The steam from our own small funnel faded blue on the twilit water as we crept along under the towering pale wall of ice.

ON our return to "Orca Bay"—Sir Ernest, we learned years later, had named it the Bay of Whales—we found a sheltered nook where the Barrier edge was low enough to provide fairly easy access from the ship. The Yelcho put out her ice anchor, and the next long, hard days were spent in unloading our supplies and setting up our camp on the ice, a half kilometre in from the edge: a task in which the Yelcho's crew lent us invaluable aid and interminable advice. We took all the aid gratefully, and most of the advice with salt.

The weather so far had been extraordinarily mild for spring in this latitude; the temperature had not yet gone below –20° F., and there was only one blizzard while we were setting up camp. But Captain Scott had spoken feelingly of the bitter south winds on the Barrier, and we had planned accordingly. Exposed as our camp was to every wind, we built no rigid structures aboveground. We set up tents to shelter in while we dug out a series of cubicles in the ice itself, lined them with hay insulation and pine boarding, and roofed them with canvas over bamboo poles, covered with snow for weight and insulation. The big central room was instantly named Buenos Aires by our Argentineans, to whom the center, wherever one is, is always Buenos Aires. The heating and cooking stove was in Buenos Aires. The storage tunnels and the privy (called Punta Arenas) got some back heat from the stove. The sleeping cubicles opened off Buenos Aires, and were very small, mere tubes into which one crawled feet first; they were lined deeply with hay and soon warmed by one's body warmth. The sailors called them coffins and wormholes, and looked with horror on our burrows in the ice. But our little warren or prairie-dog village served us well, permitting us as much warmth and privacy as one could reasonably expect under the circumstances. If the Yelcho was unable to get through the ice in February and we had to spend the winter in Antarctica, we certainly could do so, though on very limited rations. For this coming summer, our base—Sudamérica del Sur, South South America, but we generally called it the Base—was intended merely as a place to sleep, to store our provisions, and to give shelter from blizzards.

To Berta and Eva, however, it was more than that. They were its chief architect-designers, its most ingenious builder-excavators, and its most diligent and contented occupants, forever inventing an improvement in ventilation, or learning how to make skylights, or revealing to us a new addition to our suite of rooms, dug in the living ice. It was thanks to them that our stores were stowed so handily, that our stove drew and heated so efficiently, and that Buenos Aires, where nine people cooked, ate, worked, conversed, argued, grumbled, painted, played the guitar and banjo, and kept the Expedition's library of books and maps, was a marvel of comfort and convenience. We lived there in real amity; and if you simply had to be alone for a while, you crawled in your sleeping hole head first.

Berta went a little farther. Whe
she had done all she could to mal
South South America livable, she du
out one more cell just under the i
surface, leaving a nearly transparen
sheet of ice like a greenhouse roof; ar
there, alone, she worked at sculpture
They were beautiful forms, some lil
a blending of the reclining huma
figure with the subtle curves ar
volumes of the Weddell seal, othe
like the fantastic shapes of ice cornic
and ice caves. Perhaps they are the
still, under the snow, in the bubble
the Great Barrier. There where sl
made them, they might last as long
stone. But she could not bring the
north. That is the penalty for carvir
in water.

Captain Pardo was reluctant
leave us, but his orders did not perm
him to hang about the Ross Sea inde
nitely, and so at last, with many ea
nest injunctions to us to stay put—
make no journeys—take no risks—b
ware of frostbite—don't use edge too
—look out for cracks in the ice—ar
a heartfelt promise to return to Or
Bay on February 20th, or as near th
date as wind and ice would permit, t
good man bade us farewell, and h
crew shouted us a great goodbye che
as they weighed anchor. That ev
ning, in the long orange twilight
October, we saw the topmast of t

GRRRR!
WOODMAN

lcho go down the north horizon, er the edge of the world, leaving us ice, and silence, and the Pole.

That night we began to plan the uthern Journey.

THE ensuing month passed in short practice trips and depot- ing. The life we had led at home, ough in its own way strenuous, had t fitted any of us for the kind of ain met with in sledge-hauling at or twenty degrees below freezing. e all needed as much working out as ssible before we dared undertake a ng haul.

My longest exploratory trip, made th Dolores and Carlota, was south- st toward Mt. Markham, and it was nightmare—blizzards and pressure all the way out, crevasses and no w of the mountains when we got ere, and white weather and sastrugi the way back. The trip was useful, wever, in that we could begin to timate our capacities; and also in at we had started out with a very avy load of provisions, which we poted at a hundred and a hundred d thirty miles south-southwest of se. Thereafter other parties pushed farther, till we had a line of snow irns and depots right down to Latide 83° 43′, where Juana and Zoe, an exploring trip, had found a kind stone gateway opening on a great acier leading south. We established these depots to avoid, if possible, the hunger that had bedevilled Captain Scott's Southern Party, and the consequent misery and weakness. And we also established to our own satisfaction—intense satisfaction—that we were sledge-haulers at least as good as Captain Scott's husky dogs. Of course we could not have expected to pull as much or as fast as his men. That we did so was because we were favored by much better weather than Captain Scott's party ever met on the Barrier; and also the quantity and quality of our food made a very considerable difference. I am sure that the fifteen per cent of dried fruits in our pemmican helped prevent scurvy; and the potatoes, frozen and dried according to an ancient Andean Indian method, were very nourishing yet very light and compact—perfect sledding rations. In any case, it was with considerable confidence in our capacities that we made ready at last for the Southern Journey.

THE Southern Party consisted of two sledge teams: Juana, Dolores, and myself; Carlota, Pepita, and Zoe. The support team of Berta, Eva, and Teresa set out before us with a heavy load of supplies, going right up onto the glacier to prospect routes and leave depots of supplies for our return journey. We followed five days behind them, and met them returning between Depot Ercilla and Depot Miranda. (*See map.*) That "night"—of course, there was no real darkness—we were all nine together in the heart of the level plain of ice. It was November 15th, Dolores's birthday. We celebrated by putting eight ounces of pisco in the hot chocolate, and became very merry. We sang. It is strange now to remember how thin our voices sounded in that great silence. It was overcast, white weather, without shadows and without visible horizon or any feature to break the level; there was nothing to see at all. We had come to that white place on the map, that void, and there we flew and sang like sparrows.

After sleep and a good breakfast the Base Party continued north and the Southern Party sledged on. The sky cleared presently. High up, thin clouds passed over very rapidly from southwest to northeast, but down on the Barrier it was calm and just cold enough, five or ten degrees below freezing, to give a firm surface for hauling.

On the level ice we never pulled less than eleven miles (seventeen kilometres) a day, and generally fifteen or sixteen miles (twenty-five kilometres). (Our instruments, being British-made, were calibrated in feet, miles, degrees Fahrenheit, etc., but we often converted miles to kilometres, because the larger numbers sounded more encouraging.) At the time we left South America, we knew only that Mr. Ernest Shackleton had mounted another expedition to the Antarctic in 1907, had tried to attain the Pole but failed, and had returned to England in June of the current year, 1909. No coherent report of his explorations had yet reached South America when we left; we did not know what route he had gone, or how far he had got. But we were not altogether taken by surprise when, far across the featureless white plain, tiny beneath the mountain peaks and the strange silent flight of the rainbow-fringed cloud wisps, we saw a fluttering dot of black. We turned west from our course to visit it: a snow heap nearly buried by the winter's storms—a flag on a bamboo pole, a mere shred of threadbare cloth, an empty oilcan—and a few footprints standing some inches above the ice. In some conditions of weather the snow compressed under one's weight remains when the surrounding soft snow melts or is scoured away by the wind; and so these reversed footprints had been left standing all these months, like rows of cobbler's lasts—a queer sight.

We met no other such traces on our way. In general I believe our course was somewhat east of Mr. Shackleton's. Juana, our surveyor, had trained herself well and was faithful and methodical in her sightings and readings, but our equipment was minimal—a theodolite on tripod legs, a sextant with artificial horizon, two compasses, and chronometers. We had only the wheel meter on the sledge to give distance actually travelled.

In any case, it was the day after passing Mr. Shackleton's waymark that I first saw clearly the great glacier among the mountains to the southwest, which was to give us a pathway from the sea level of the Barrier up to the altiplano, ten thousand feet above. The approach was magnificent: a gateway formed by immense vertical domes and pillars of rock. Zoe and Juana had called the vast ice river that flowed through that gateway the Florence Nightingale Glacier, wishing to honor the British, who had been the inspiration and guide of our Expedition; that very brave and very peculiar lady seemed to represent so much that is best, and strangest, in the island race. On maps, of course, this glacier bears the name Mr. Shackleton gave it: the Beardmore.

The ascent of the Nightingale was not easy. The way was open at first, and well marked by our support party, but after some days we came among terrible crevasses, a maze of hidden cracks, from a foot to thirty feet wide and from thirty to a thousand feet deep. Step by step we went, and step by step, and the way always upward now. We were fifteen days on the glacier. At first the weather was hot—up to 20° F.—and the hot nights without darkness were wretchedly uncomfortable in our small tents. And all of us suffered more or less from snow blindness just at the time when we wanted clear eyesight to pick our way among the ridges and crevasses of the tortured ice, and to see the wonders about and before us. For at every day's advance more great, nameless peaks came into view in the west and southwest, summit beyond summit, range beyond range, stark rock and snow in the unending noon.

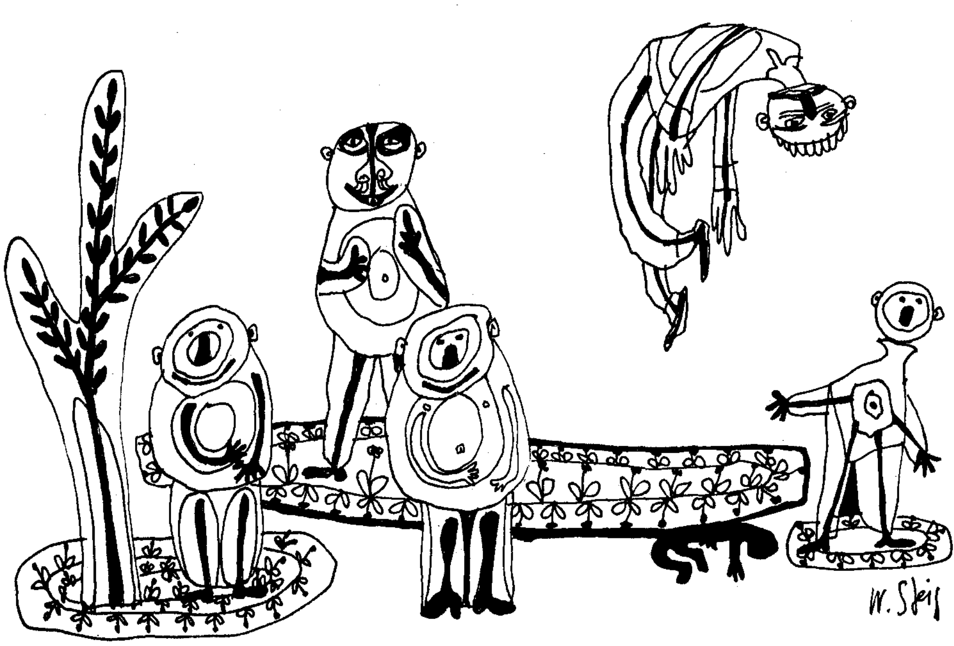
We gave names to these peaks, not very seriously, since we did not expect our discoveries to come to the attention of geographers. Zoe had a gift for naming, and it is thanks to her that certain sketch maps in various suburban South American attics bear such curious features as "Bolívar's Big Nose," "I Am General Rosas," "The Cloudmaker," "Whose Toe?," and "Throne of Our Lady of the Southern Cross." And when at last we got up onto the altiplano, the great interior plateau, it was Zoe who called it the pampa, and maintained that we walked there among vast herds of invisible cattle, transparent cattle pastured on the spindrift snow, their gauchos the restless, merciless winds. We were by then all a little crazy with exhaustion and the great altitude—twelve thousand feet—and the cold and the wind blowing and the luminous circles and crosses surrounding the suns, for often there were three or four suns in the sky, up there.

That is not a place where people have any business to be. We should have turned back; but since we had worked so hard to get there, it seemed that we should go on, at least for a while.

A blizzard came, with very low temperatures, so we had to stay in the tents, in our sleeping bags, for thirty hours—a rest we all needed, though it was warmth we needed most, and there was no warmth on that terrible plain anywhere at all but in our veins. We huddled close together all that time. The ice we lay on is two miles thick.

It cleared suddenly and became, for the plateau, good weather: twelve below zero and the wind not very strong. We three crawled out of our tent and met the others crawling out of theirs. Carlota told us then that her group wished to turn back. Pepita had been feeling very ill; even after the rest during the blizzard, her temperature would not rise above 94°. Carlota was having trouble breathing. Zoe was perfectly fit, but much preferred staying with her friends and lending them a hand in difficulties to pushing on toward the Pole. So we put the four ounces of pisco that we had been keeping for Christmas into the breakfast cocoa, and dug out our tents, and loaded our sledges, and parted there in the white daylight on the bitter plain.

Our sledge was fairly light by now. We pulled on to the south. Juana calculated our position daily. On the twenty-second of December, 1909, we reached the South Pole. The weather was, as always, very cruel. Nothing of any kind marked the dreary whiteness. We discussed leaving some kind of mark or monument, a snow cairn, a tent pole and flag; but there seemed no particular reason to do so. Anything we could do, anything we were, was insignificant, in that awful place.



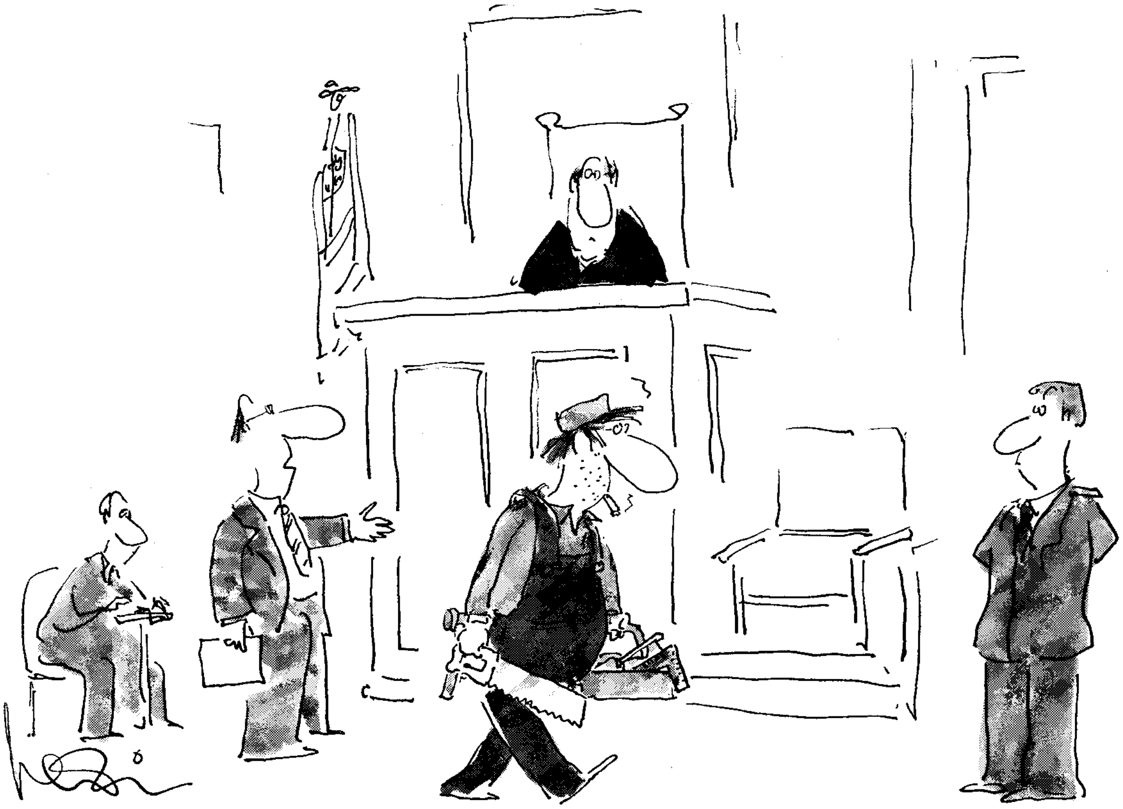
The World Outside

e put up the tent r shelter for an hour ıd made a cup of tea, ıd then struck "90° amp."

Dolores, standing pa- ent as ever in her edging harness, looked the snow; it was so ard frozen that it owed no trace of our otprints coming, and e said, "Which way?"

"North," said Juana.

It was a joke, because that particular place ere is no other direc- on. But we did not ugh. Our lips were acked with frostbite ıd hurt too much to let laugh. So we started ck, and the wind at ır backs pushed us ong, and dulled the ife edges of the waves frozen snow.



"Your Honor, the defense calls to the stand the first of several experts."

• •

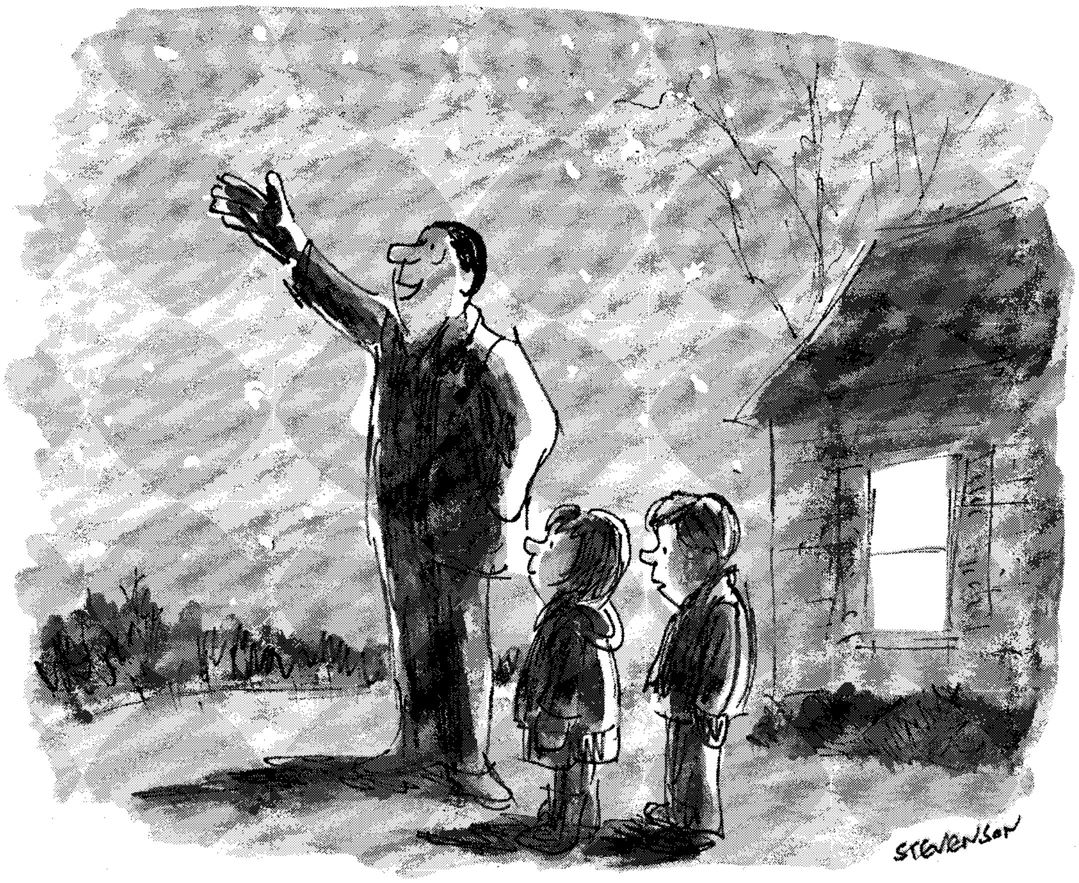
All that week the izzard wind pursued like a pack of mad gs. I cannot describe I wished we had t gone to the Pole. I think I wish it en now. But I was glad even then at we had left no sign there, for me man longing to be first might me some day, and find it, and know en what a fool he had been, and eak his heart.

We talked, when we could talk, of tching up to Carlota's party, since ey might be going slower than we. fact they had used their tent as a il to catch the following wind and ıd got far ahead of us. But in many aces they had built snow cairns or ft some sign for us; once, Zoe had ritten on the lee side of a ten-foot struga, just as children write on the nd of the beach at Miraflores, "This ay Out!" The wind blowing over e frozen ridge had left the words rfectly distinct.

In the very hour that we began to scend the glacier, the weather rned warmer, and the mad dogs ere left to howl forever tethered to e Pole. The distance that had taken fifteen days going up we covered in ıly eight days going down. But the od weather that had aided us de- ending the Nightingale became a ırse down on the Barrier ice, where e had looked forward to a kind of yal progress from depot to depot, eating our fill and taking our time for the last three hundred-odd miles. In a tight place on the glacier I lost my goggles—I was swinging from my harness at the time in a crevasse—and then Juana broke hers when we had to do some rock-climbing coming down to the Gateway. After two days in bright sunlight with only one pair of snow goggles to pass amongst us, we were all suffering badly from snow blindness. It became acutely painful to keep lookout for landmarks or depot flags, to take sightings, even to study the compass, which had to be laid down on the snow to steady the needle. At Concolorcorvo Depot, where there was a particularly good supply of food and fuel, we gave up, crawled into our sleeping bags with bandaged eyes, and slowly boiled alive like lobsters in the tent exposed to the relentless sun. The voices of Berta and Zoe were the sweetest sound I ever heard. A little concerned about us, they had skied south to meet us. They led us home to Base.

WE recovered quite swiftly, but the altiplano left its mark. When she was very little, Rosita asked if a dog "had bitted Mama's toes." I told her yes—a great, white, mad dog named Blizzard! My Rosita and my Juanito heard many stories when they were little, about that fearful dog and how it howled, and the transparent cattle of the invisible gauchos, and a river of ice eight thousand feet high called Nightingale, and how Cousin Juana drank a cup of tea standing on the bottom of the world under seven suns, and other fairy tales.

We were in for one severe shock when we reached Base at last. Teresa was pregnant. I must admit that my first response to the poor girl's big belly and sheepish look was anger—rage—fury. That one of us should have concealed anything, and such a thing, from the others! But Teresa had done nothing of the sort. Only those who had concealed from her what she most needed to know were to blame. Brought up by servants, with four years' schooling in a convent, and married at sixteen, the poor girl was still so ignorant at twenty years of age that she had thought it was "the cold weather" that made her miss her periods. Even this was not entirely stupid, for all of us on the Southern Journey had seen our periods change or stop altogether as we experienced increasing cold, hunger, and fatigue. Teresa's appetite had begun to draw gen-



"That's not what Carl Sagan said."

• •

eral attention; and then she had begun, as she said pathetically, "to get fat." The others were worried at the thought of all the sledge-hauling she had done, but she flourished, and the only problem was her positively insatiable appetite. As well as could be determined from her shy references to her last night on the hacienda with her husband, the baby was due at just about the same time as the Yelcho, February 20th. But we had not been back from the Southern Journey two weeks when, on February 14th, she went into labor.

Several of us had borne children and had helped with deliveries, and anyhow most of what needs to be done is fairly self-evident; but a first labor can be long and trying, and we were all anxious, while Teresa was frightened out of her wits. She kept calling for her José till she was as hoarse as a skua. Zoe lost all patience at last and said, "By God, Teresa, if you say 'José!' once more, I hope you have a penguin!" But what she had, after twenty long hours, was a pretty little red-faced girl.

Many were the suggestions for that child's name from her eight proud midwife aunts: Polita, Penguina, McMurdo, Victoria . . . But Teresa announced, after she had had a good sleep and a large serving of pemmican, "I shall name her Rosa—Rosa del Sur," Rose of the South. That night we drank the last two bottles of Veuve Clicquot (having finished the pisco at 88° 60′ South) in toasts to our little Rose.

On the nineteenth of February, a day early, my Juana came down into Buenos Aires in a hurry. "The ship," she said, "the ship has come," and she burst into tears—she who had never wept in all our weeks of pain and weariness on the long haul.

Of the return voyage there is nothing to tell. We came back safe.

In 1912 all the world learned that the brave Norwegian Amundsen had reached the South Pole; and then, much later, we heard the accounts of how Captain Scott and his men had come there after him but did not come home again.

Just this year, Juana and I wrote to the captain of the Yelcho, for the newspapers have been full of the story of his gallant dash to rescue Sir Ernest Shackleton's men from Elephant Island, and we wished to congratulate him, and once more to thank him. Never one word has he breathed of our secret. He is a man of honor, Luis Pardo.

I ADD this last note in 1929. Over the years we have lost touch with one another. It is very difficult for women to meet, when they live as far apart as we do. Since Juana died, I have seen none of my old sledge-mates, though sometimes we write. Our little Rosa del Sur died of the scarlet fever when she was five years old. Teresa had many other children. Carlota took the veil in Santiago ten years ago. We are old women now, with old husbands, and grown children, and grandchildren who might some day like to read about the Expedition. Even if they are rather ashamed of having such a crazy grandmother, they may enjoy sharing in the secret. But they must not let Mr. Amundsen know! He would be terribly embarrassed and disappointed. There is no need for him or anyone else outside the family to know. We left no footprints, even.

—URSULA K. LE GUIN

•

The Sunday coffee and social hours, held in Tuttle Hall after the 11 A.M. services, are a very important part of our parish life. They really are "hours," with many people staying on and on to enjoy the fellowship. Eileen Lynch has been serving the Grace Church family as coordinator of these gatherings for several years; our heartfelt thanks go to her for her faithful ministry. This is the sort of unheralded but vital service which a church cannot survive.

The new coordinator is Patsy Drab, and she is going to need a lot of help.—*Bulletin of Grace Church in New York.*

All signs certainly *point* that way.

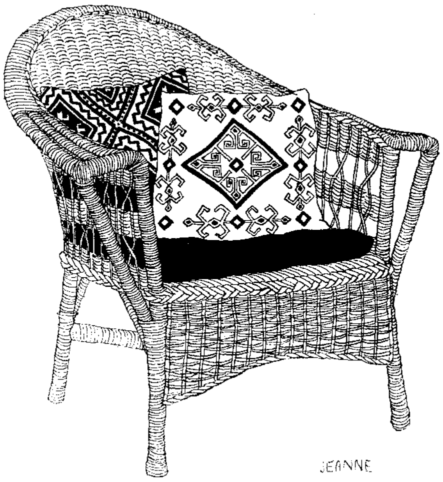
REFLECTIONS

THE FATE OF THE EARTH

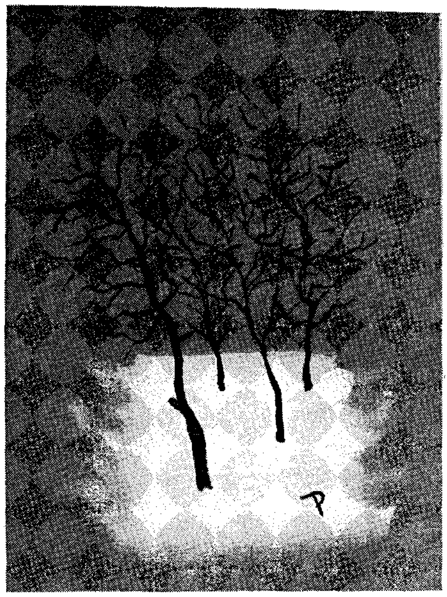
I—A REPUBLIC OF INSECTS AND GRASS

SINCE July 16, 1945, when the first atomic bomb was detonated, at the Trinity test site, near Alamogordo, New Mexico, mankind has lived with nuclear weapons in its midst. Each year, the number of bombs has grown, until now there are some fifty thousand warheads in the world, possessing the explosive yield of roughly twenty billion tons of TNT, or one million six hundred thousand times the yield of the bomb that was dropped by the United States on the city of Hiroshima, in Japan, less than a month after the Trinity explosion. These bombs were built as "weapons" for "war," but their significance greatly transcends war and all its causes and outcomes. They grew out of history, yet they threaten to end history. They were made by men, yet they threaten to annihilate man. They are a pit into which the whole world can fall—a nemesis of all human intentions, actions, and hopes. Only life itself, which they threaten to swallow up, can give the measure of their significance. Yet in spite of the immeasurable importance of nuclear weapons, the world has declined, on the whole, to think about them very much. We have thus far failed to fashion, or to discover within ourselves, an emotional or intellectual or political response to them. This peculiar failure of response, in which hundreds of millions of people acknowledge the presence of an immediate, unremitting threat to their existence and to the existence of the world they live in but do nothing about it—a failure in which both self-interest and fellow-feeling seem to have died—has itself been such a striking phenomenon that it has to be regarded as an extremely important part of the nuclear predicament as this has existed so far. Only very recently have there been signs, in Europe and in the United States, that public opinion has been stirring awake, and that ordinary people may be beginning to ask themselves how they should respond to the nuclear peril.

In what follows, I shall offer some thoughts on the origin and the significance of this predicament, on why we have so long resisted attempts to think about it (we even call a nuclear holocaust "unthinkable") or deal with it, and on the shape and magnitude of the choice that it forces upon us. But first I wish to describe the consequences for the world, insofar as these can be known, of a full-scale nuclear holocaust at the current level of global armament. We have lived in the shadow of nuclear arms for more than thirty-six years, so it does not seem too soon for us to familiarize ourselves with them—to acquaint ourselves with such matters as the "thermal pulse," the "blast wave," and the "three stages of radiation sickness." A description of a full-scale holocaust seems to be made necessary by the simple but basic rule that in order to discuss something one should first know what it is. A considerable number of excellent studies concentrating on various aspects of the damage that can be done by nuclear arms do exist, many of them written only in the last few years. These include a report entitled "The Effects of Nuclear War," which was published in 1979 by the Congressional Office of Technology Assessment, and which deals chiefly with the consequences of a holocaust for the societies of the United States and the Soviet Union; the latest (1977) edition of the indispensable, classic textbook "The Effects of Nuclear Weapons," which is edited by Samuel Glasstone and Philip J. Dolan (hereafter I shall refer to it as "Glasstone") and was published jointly by the Department of Defense and the Energy Research and Development Administration, and which makes use of the government's findings from the bombing of Hiroshima and Nagasaki and from the American nuclear-test program to describe the characteristics and the destructive effects of nuclear explosions of all kinds; "Hiroshima and Nagasaki," a comprehensive study, carried out by a group of distinguished Japanese scientists and published here in 1981, of the consequences of the bombing of those two cities; "Long-Term Worldwide Effects of Multiple Nuclear-Weapons Detonations," a report on the global ecological consequences of a nuclear holocaust which was published in 1975 by the National Academy of Sciences (hereafter referred to as the N.A.S. report); a report of research conducted in 1974 and 1975 for the Department of Transportation's Climatic Impact Assessment Program on the consequences of man-made perturbances—including the explosion of nuclear weapons—of the earth's atmosphere; and "Survival of Food Crops and Livestock in the Event of Nuclear War," proceedings of a 1970 symposium held at Brookhaven National Laboratory, on Long Island, and sponsored by the Office of Civil Defense, the Atomic Energy Commission, and the Department of Agriculture, at which the effects of radiation from fallout on both domesticated and natural ecosystems were discussed. Drawing on these and other printed sources, and also on interviews that I conducted recently with a number of scientists, I have attempted to piece together an account of the principal consequences of a full-scale holocaust. Such an account, which in its nature must be both technical and gruesome, cannot be other than hateful to dwell on, yet it may be only by descending into this hell in imagination now that we can hope to escape descending into it in reality at some later time. The knowledge we thus gain cannot in itself protect us from nuclear annihilation, but without it we cannot begin to take the measures that can actually protect us—or, for that matter, even begin to think in an appropriate way about our plight.



The widespread belief that a nuclear holocaust would in some sense bring about the end of the world has been reflected in the pronouncements of both American and Soviet leaders in the years since the invention of nuclear weapons. For example, President Dwight Eisenhower wrote in a letter in 1956 that one day both sides would have to "meet at the conference table with the understanding that the era of armaments has ended, and the human race must conform its actions to this truth or die." More recently—at a press conference in 1974—Secretary of State Henry Kissinger said that "the accumulation of nuclear arms has to be constrained if mankind is not to destroy itself." And President Jimmy Carter said in his farewell address a year ago that after a nuclear holocaust "the survivors, if any, would live in despair amid the poisoned ruins of a civilization that had committed suicide." Soviet leaders have been no less categorical in their remarks. In late 1981, for example, the Soviet government printed a booklet in which it stated, "The Soviet Union holds that nuclear war would be a universal disaster, and that it would most probably mean the end of civilization. It may lead to the destruction of all mankind." In these and other statements, examples of which could be multiplied indefinitely, Soviet and American leaders have acknowledged the supreme importance of the nuclear peril. However, they have not been precise about what level of catastrophe they were speaking of, and a variety of different outcomes, including the annihilation of the belligerent nations, the destruction of "human civilization," the extinction of mankind, and the extinction of life on earth, have been mentioned, in loose rhetorical fashion, more or less interchangeably. No doubt, the leaders have been vague in part because of the difficulty of making reliable predictions about an event that has no precedent. Yet it seems important to arrive, on the basis of available information, at some judgment concerning the likelihood of these outcomes, for they are not the same. Nor, presumably, would the appropriate political response to all of them be the same. The annihilation of the belligerent nations would be a catastrophe beyond anything in history, but it would not be the end of the world. The destruction of human civilization, even without the biological destruction of the human species, may perhaps rightly be called the end of the world, since it would be the end of that sum of cultural achievements and human relationships which constitutes what many people mean when they speak of "the world." The biological destruction of mankind would, of course, be the end of the world in a stricter sense. As for the destruction of all life on the planet, it would be not merely a human but a planetary end—the death of the earth. And although the annihilation of other forms of life could hardly be of concern to human beings once they themselves had been annihilated, this more comprehensive, planetary termination is nevertheless full of sorrowful meaning for us as we reflect on the possibility now, while we still exist. We not only live on the earth but also are of the earth, and the thought of its death, or even of its mutilation, touches a deep chord in our nature. Finally, it must be noted that a number of observers have, especially in recent years, denied that a holocaust would obliterate even the societies directly attacked. If this were so, then nuclear weapons, while remaining fearsome, would be qualitatively no different from other weapons of war, and the greater part of the nuclear predicament would melt away. (In the discussions of some analysts, nuclear attacks are made to sound almost beneficial. For example, one official of the Office of Civil Defense wrote a few years back that although it might be "verging on the macabre" to say so, "a nuclear war could alleviate some of the factors leading to today's ecological disturbances that are due to current high-population concentrations and heavy industrial production." According to a different, less sanguine view of things, this observation and other cheerful asides of the kind which crop up from time to time in the literature go well over the verge of the macabre.)

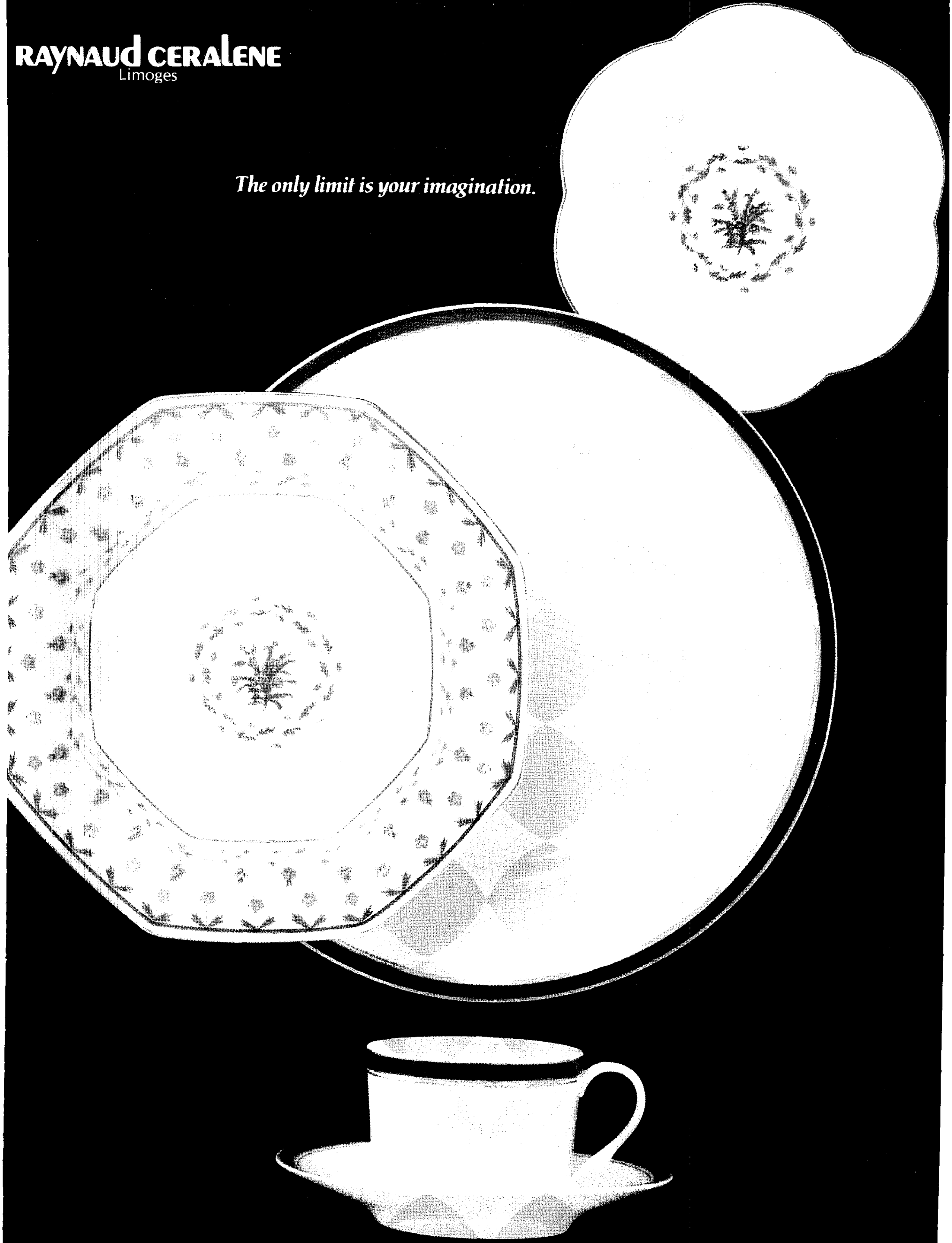


Anyone who inquires into the effects of a nuclear holocaust is bound to be assailed by powerful and conflicting emotions. Preëminent among these, almost certainly, will be an overwhelming revulsion at the tremendous scene of devastation, suffering, and death which is opened to view. And accompanying the revulsion there may be a sense of helplessness and defeat, brought about by an awareness of the incapacity of the human soul to take in so much horror. A nuclear holocaust, widely regarded as "unthinkable" but never as undoable, appears to confront us with an action that we can perform but cannot quite conceive. Following upon these first responses, there may come a recoil, and a decision, whether conscious or unconscious, not to think any longer about the possibility of a nuclear holocaust. (Since a holocaust is a wholly prospective rather than a present calamity, the act of thinking about it is voluntary, and the choice of not thinking about it is always available.) When one tries to face the nuclear predicament, one feels sick, whereas when one pushes it out of mind, as apparently one must do most of the time in order to carry on with life, one feels well again. But this feeling of well-being is based on a denial of the most important reality of our time, and therefore is itself a kind of sickness. A society that systematically shuts its eyes to an urgent peril to its physical survival and fails to take any steps to save itself cannot be called psychologically well. In effect, whether we think about nuclear weapons or avoid thinking about them, their presence among us makes us sick, and there seems to be little of a purely mental or emotional nature that we can do about it.

A part of our quandary may lie in the fact that even a denial of the reality stems from what is, in a sense, a refusal to accept nuclear annihilation; that is, a refusal to accept even in imagination what Dr. Robert Jay Lifton, the author of pioneering studies of the psychology of the nuclear predicament, has appropriately called an "immersion in death." As such, the denial may have intermixed in it something that is valuable and worthy of respect. Like active revulsion and protest against nuclear weapons, a denial of their reality may spring—in part, at least—from a love of life, and since a love of life may ultimately be all that we have to pit against our doom, we

RAYNAUD CERALENE
Limoges

The only limit is your imagination.



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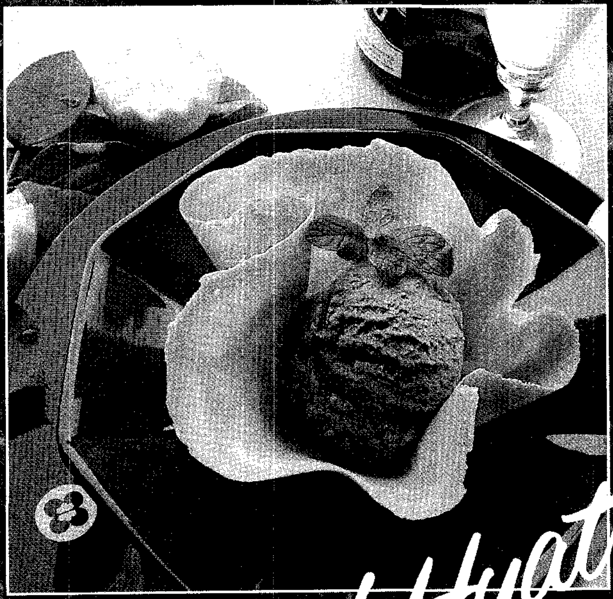

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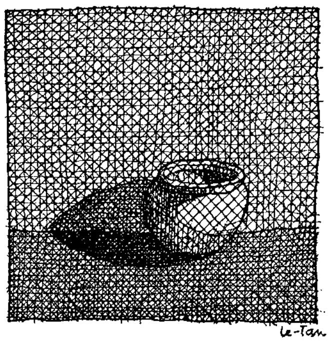
cannot afford thoughtlessly to tear aside any of its manifestations. Because denial is a form of self-protection, if only against anguishing thoughts and feelings, and because it contains something useful, and perhaps even, in its way, necessary to life, anyone who invites people to draw aside the veil and look at the peril face to face is at risk of trespassing on inhibitions that are a part of our humanity. I hope in this article to proceed with the utmost possible respect for all forms of refusal to accept the unnatural and horrifying prospect of a nuclear holocaust.

WHEN men split the nucleus of the atom, they unleashed into terrestrial nature a basic energy of the cosmos—the energy latent in mass—which had never before been active in any major way on earth. Until then, this energy had been kept largely within the nucleus by a force known to physicists as the strong force, which is the glue that holds the nucleus of an atom together, and is by far the strongest of the four basic forces that determine the behavior of all matter in the universe. The strong force and what is called the weak force are chiefly responsible for the static properties of nuclei. The two others, which, being outside the nucleus, had until the explosion of nuclear weapons been responsible for virtually all life and motion on earth since the earth's formation, four and a half billion years ago, are the electromagnetic force, which is responsible for, among other things, all chemical bonds, and the gravitational force, which is a force of attraction between masses. It is largely because strong-force reactions, in which the energy in mass is released, were almost entirely excluded from terrestrial affairs (one of the few exceptions is a spontaneous nuclear chain reaction that once broke out in a West African uranium deposit) and because weak-force reactions (manifested in the decay of radioactive materials) were inconspicuous enough to go mostly unnoticed that the two great conservation laws of nineteenth-century physics—the law of the conservation of energy and the law of the conservation of mass—appeared to physicists of that time to hold true. Nineteenth-century science believed that mass and energy constituted separate, closed systems, in which the amount of each remained forever constant, no matter what transformations each might undergo. It was not until twentieth-century physicists, pursuing their investigations into the realms of the irreducibly small and the unexceedably large, examined the properties of energy, mass, time, and space in the subatomic realm and the cosmic realm that mass and energy were discovered to be interchangeable entities. The new relationship was governed by Albert Einstein's laws of relativity and by quantum theory, and these—not to go deeply into theoretical matters—can be described as general physical laws of the universe, of which the Newtonian laws proved to be limiting cases. (It is because the limits included almost all the middle-sized phenomena readily available to human inspection that the need for more encompassing laws was not felt until our century.)



Broadly speaking, Newtonian physics emerged as a human-scale or earthly-scale physics, valid for velocities and sizes commonly encountered by human senses, while relativity together with quantum theory was recognized as a universal physics, valid for all phenomena. (Something of the uncanny quality of modern physics' violation of common sense—by, for instance, the concept of "curved space"—inheres in the seemingly ungraspable, and therefore "unreal," power of nuclear weapons, whose construction is based on the new principles.) Likewise, the laws of conservation of mass and energy held, to a high degree of approximation, for most then observable earthly energies, masses, and velocities but broke down for the energies, masses, and velocities in the subatomic realm. Einstein noted, "It turned out that the inertia of a system necessarily depends on its energy content, and this led straight to the notion that inert mass is simply latent energy. The principle of the conservation of mass lost its independence and became fused with that of the conservation of energy." Of mass in its slow-moving, relatively unenergetic terrestrial state, Einstein remarked, "It is as though a man who is fabulously rich [i.e., mass] should never spend or give away a cent [i.e., of its energy]; no one could tell how rich he was," and on that ground Einstein excused his nineteenth-century predecessors for failing to notice what he called the "tremendous energy" in mass. By comparison with the forms of energy active on earth during its first four and a half billion years, the amount of energy latent in mass was indeed tremendous. The rate of conversion of mass into energy is given by Einstein's formula $E=mc^2$, or energy equals mass times the speed of light squared—a formula that has won what is, considering the fateful importance it has assumed for the survival of human life, a well-justified place in popular folklore. Since the speed of light is over a hundred and eighty-six thousand miles per second—the greatest velocity attainable by anything in the universe—the value in energy obtained from the transformation of even small quantities of mass is extremely high. For example, the amount of mass expended in the destruction of Hiroshima was about a gram—or one-thirtieth of an ounce. (The bomb itself, a complex machine, weighed four tons.) It would have required twelve thousand five hundred tons of TNT to release the same amount of energy. You might say that the energy yielded by application of the universal physics of the twentieth century exceeds the energy yielded by that of the terrestrial, or planetary, physics of the nineteenth century as the cosmos exceeds the earth. Yet it was within the earth's comparatively tiny, frail ecosphere that mankind released the newly tapped cosmic energy. In view of this scientific background, President Harry Truman was speaking to the point when, in his announcement that the United States had dropped an atomic bomb on Hiroshima, he told the world that "the basic power of the universe" had been harnessed for war by the United States, and added that "the force from which the sun draws its powers has been loosed against those who brought war to the Far East." The huge—the monstrous—disproportion between "the basic power of the universe" and the merely terrestrial creatures by which and against which it was aimed in anger defined the dread predicament that the world has tried, and failed, to come to terms with ever since.

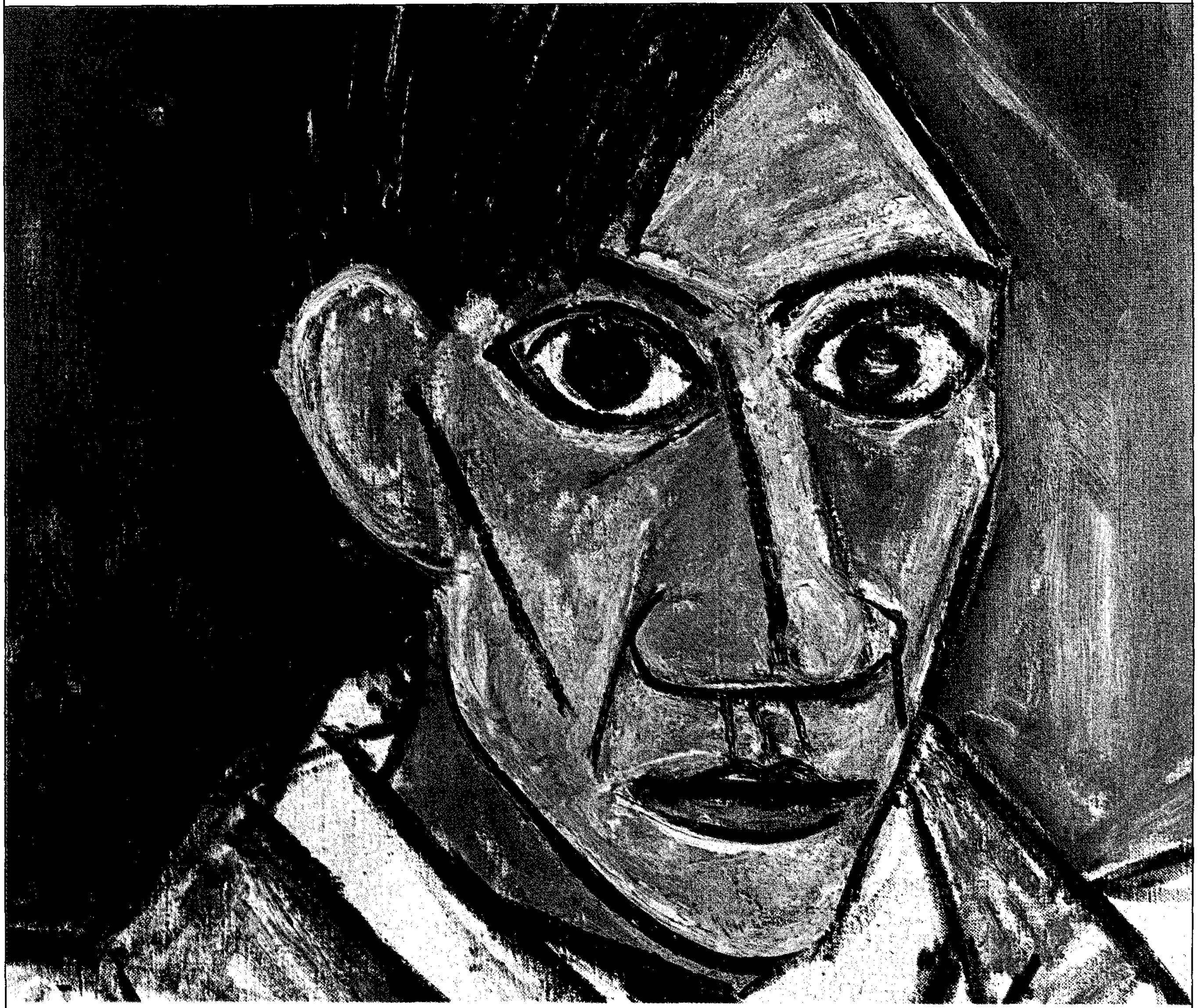
It was fortunate for earthly life that it grew up sheltered from strong-force reactions and from the nuclear energies that they release; in fact, it is doubtful whether life could have developed at all on earth if it had somehow been conditioned by continuous strong-force reactions. These release enormous bursts of energy themselves, but they also set the stage for the protracted release of energy by the other nuclear force—the weak force—in the form of nuclear radiation. When an atomic nucleus is split, releasing energy, various unstable isotopes are produced, and these new nuclei, acting under the influence of the weak force, decay, emitting radioactivity into the environment. Most of the radioactivity that occurs naturally on earth is emitted by radioactive isotopes created in strong-force reactions that occurred before the formation of the earth—in early supernovae or at the beginning of the universe, when atoms were taking shape—and by new unstable isotopes that are the products of this radioactivity. (A smaller amount of radioactivity is being continually created by the bombardment of the earth with cosmic rays.) The original radioactive isotopes are like clocks that were wound up once and have been running down ever since. Their numbers have been decreasing as their nuclei have decayed and become stable, with each species dwindling at a precise and different rate. Left to itself, the planet's supply of radioactivity would, over billions of years, have gradually declined. But when man began to split the nuclei of atoms, in bombs and in nuclear reactors, he began to create fresh batches of radioactive materials, and these, like new clocks set ticking, emitted new radiation as they also began to dwindle away toward stability. (Testing in the atmosphere was banned by treaty in 1963—France and China did not concur and have since held atmospheric tests—but before that it increased the background radiation of the earth. As a result, the present annual per-capita radiation dose in the United States is four and a half per cent above the natural background level for this country.) In general magnitude, the energy of radioactive emissions greatly overmatches the strength of the chemical bonds that hold living things together. The vulnerability to radioactivity of genetic material, in particular, is well known. It is perhaps not surprising that when cosmic energies are turned loose on a small planet overwhelming destruction is the result. Einstein was only one among many far-seeing people to express an understanding of this fundamental mismatch of strengths when he stated, in 1950, as he contemplated the likely detonation of a hydrogen—or thermonuclear—bomb (the first one was actually exploded, by the United States, in the fall of 1952), that "radioactive poisoning of the atmosphere and hence annihilation of any life on earth has been brought within the range of technical possibilities."

PARK
PARK
TGoddard

THE path of scientific discovery from Einstein's formulation, in 1905, for the conversion of mass into energy to the actual release by man of nuclear energy—a path in which the principles of quantum mechanics had to be developed and the basic structure of matter had to be unfolded—took several decades to travel. As late as the early nineteen-thirties, many of the best-qualified scientists had no notion that the nucleus of the atom could be fissioned. But in 1938 two Austrian physicists, Lise Meitner and Otto Frisch, correctly interpreting the results of some earlier experiments, announced that if uranium atoms were bombarded with neutrons they would split—or fission—into nearly equal parts, forming new elements and releasing some of their mass as energy, the amount being calculable by Einstein's renowned equation. The next step in obtaining usable energy from matter would be to bring about a chain reaction of fissioning uranium atoms, and this was undertaken in 1939 by the United States government, first under the auspices of an Advisory Committee on Uranium and later by the secret, multi-billion-dollar program known as the Manhattan Project, whose aim was to build an atomic bomb for use by the Allies in the Second World War. When a uranium nucleus is split, it releases several neutrons at high velocity. In a chain reaction, the neutrons released split other nuclei, which, in turn, release other neutrons, and these neutrons split still further nuclei, and so on—in a series that ends only when the available material is used up or dispersed. In some substances, such as uranium-235 or plutonium-239, a spontaneous chain reaction will start when enough of the material—a quantity known as a critical mass—is assembled in one place. But a chain reaction does not necessarily make a bomb. For an explosion to occur, the reaction has to go on long enough for explosive energies to build up before the immensely rapid expansion of the fissionable material brought about by the energy released in the chain reaction terminates the reaction. The required prolongation can be produced by sudden compression of the fissionable material to a very high density. Then the neutrons, flying about among the more tightly packed atoms, will spawn a larger number of "generations" of fissioned nuclei before the chain reaction is halted by dispersion. Since the number of fissions increases exponentially with each new generation, a huge amount of energy is created very rapidly in the late generations of the reaction. According to Glasstone, the release of energy equivalent to one hundred thousand tons of TNT would require the creation of fifty-eight generations before the reaction ended, and ninety-nine and nine-tenths per cent of the energy would be released in the last seven generations. Since each generation would require no more than a hundred-millionth of a second, this energy would be released in less than a tenth of a millionth of a second. ("Clearly," Glasstone remarks, "most of the fission energy is released in an extremely short period.")

In a fission reaction, energy is released in an expenditure of mass. Each atom contains a balance of forces and energies. Within the nucleus, the "tremendous energy" latent in mass is kept out of general circulation by the binding action of the strong force, holding the particles of the nucleus—its protons and neutrons—together. The strong force, however, is opposed by positive electrical charges that are carried by the protons in the nucleus and tend to drive the protons apart. The nuclei of the heaviest atoms, such as uranium and plutonium, are the least tightly bound together, because they contain the largest numbers of protons and so the electrical repulsion is greatest in them. (In fact, the presence of the disintegrative pressure of the electrical force within nuclei, which increases with the number of protons, forms an upper limit to the size of nuclei; there is a point beyond which they cannot cohere for any length of time.) Because of the relative weakness of the binding force in the heaviest nuclei, they are the best for

TIME



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TIME Magazine's commitment to the instructive role of journalism was seldom so taxed as in dealing with Picasso. He is a paradox: the Old Master of modern painting; the hero of a spectacularly successful exhibition at New York's Museum of Modern Art. His name is familiar to cognoscenti and laymen alike.

But he remains for many a perfect enigma, the man who unaccountably gives faces more than the usual complement of noses.

Difficult as it is to explain Picasso in all his variety, TIME did it with characteristic panache, accuracy, economy, and with a sharp eye for the memorable detail, to show how Picasso's individualism, his immense self-confidence, and his aptitude for translating feeling into meaning, helped make him the preeminent 20th-century artist.

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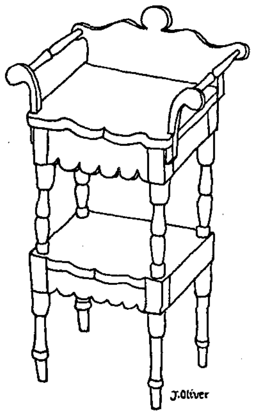
fissioning. When the nucleus of an atom of uranium-235 is struck by a neutron, the binding grip of the strong force is loosed, electrical repulsion takes over, the nucleus divides, and its fragments are driven apart with an energy of motion which, in obedience to Einstein's equation, is equal to the amount of the mass lost times the speed of light squared.

Energy can also be released by fusion, which is the basis for the hydrogen bomb. To cause fusion, nuclei must be driven against one another with such velocity that the electrical repulsion between their respective protons is overcome and the strong force can act to bind them together into new nuclei. The best nuclei for fusion are the lightest—those of hydrogen and its isotopes and the elements nearest them in mass, because, having the fewest protons, they have the smallest amount of electrical repulsion to overcome. Dr. Henry Kendall, who teaches physics at the Massachusetts Institute of Technology and guides research in particle physics there, and who, as chairman of the Union of Concerned Scientists, has for many years devoted much of his time and attention to the nuclear question in all its aspects, recently described to me what happens in a fusion reaction. "Let a small rounded depression—or 'well,' to use the proper physical term—in a level board stand for a nucleus, and let a much smaller steel ball stand for a particle," he said. "If you roll the ball along the board at the well, it will travel down one side of the well, up the other, and out again. On the other hand, if you start the ball rolling at a point partway down one side of the well, it will rise to an equal height on the other side, then return to its starting point, and, barring other influences, continue to oscillate like that forever. This is a good representation of the bound state of the particle in the nucleus. The problem of fusion is to introduce the steel ball into the well from the outside and have it remain there in the bound state instead of shooting out the other side. It can do this only by somehow *giving up* energy. In fusion, we give the name 'binding energy' to the amount that must be given up for the outside particle to become bound in the well. A good example of this loss of energy occurs in the fusion of deuterium and tritium, two isotopes of hydrogen. The tritium nucleus contains one proton and two neutrons, and the deuterium nucleus contains one proton and one neutron, for a total of five particles. In the fusion of these isotopes, four of the particles—two neutrons and two protons—hang together very tightly, and are able to swat out the remaining neutron with incredible violence, thus getting rid of the necessary amount of energy. And this is the energy that a fusion reaction releases. Once the four other particles have done that, they can run around in their hole undisturbed. But in order for this or any fusion reaction to take place the nuclei have to be driven very close together. Only then can the strong force reach out its stubby but powerful arms in the giant handshake that fuses the nuclei together and unleashes the explosive energy of the hydrogen bomb."

Fission and fusion can occur in a great many forms, but in all of them mass is lost, the grip of the strong force is tightened on the products of the reaction, and energy is released. A typical hydrogen bomb is a four-stage device. In the first stage, a conventional explosion is set off; in the second stage, the conventional explosion initiates a fission reaction, which is, in fact, an atomic bomb; in the third stage, the heat from the atomic bomb initiates a fusion reaction; and in the fourth stage neutrons from the fusion reaction initiate additional fission, on a scale vastly greater than the first, in a surrounding blanket of fissionable material. In my conversation with Dr. Kendall, he described the explosion of an average hydrogen bomb to me in somewhat more detail. "The trigger," he said, "consists of a carefully fashioned, subcritical, spherical piece of plutonium, with a neutron-initiator device in its interior and a high-explosive jacket surrounding it. Things begin when detonators all over the sphere of the high-explosive jacket go off—as nearly simultaneously as the design permits. Now the high-explosive jacket explodes and sends a shock wave travelling inward in a shrinking concentric sphere, and gaining in force and temperature as it proceeds. When its leading edge reaches the plutonium core, there is an abrupt jump in pressure, which squeezes the plutonium in on all sides with great precision. The pressure makes the plutonium go from subcritical to supercritical. At this point, the neutron initiator fires, and the chain reaction begins. The trick is to compress the plutonium as much as possible as quickly as possible, because then more generations of nuclei will be fissioned, and more energy will be released, before the explosion, in effect, blows itself out. When that happens, all the energy from the plutonium trigger will have been released, and particles whose atomic identity has been lost will be boiling and surging in an expanding sphere whose temperature exceeds stellar level. In all the universe, temperatures of equal heat are to be found only in such transient phenomena as exploding supernovae. Now the fusion—otherwise known as the thermonuclear reaction, because of the extreme heat needed to initiate it—can begin. The fusion fuels—lithium and isotopes of hydrogen—fly around with such velocity that they can simply coast right into one another, spitting out nuclear particles as they fuse. This is not a chain reaction, but again the explosion is stopped by the expansion caused by its own heat. By the time that happens, however, the last stage—the fissioning, by neutrons released both by the fission trigger and by the fusion reaction, of the surrounding blanket of material, which might be uranium-238—is under way. There is basically no limit to the size or yield of a thermonuclear weapon. The only limits on a bomb's destructive effect are the earth's capacity to absorb the blast."

Whereas most conventional bombs produce only one destructive effect—the shock wave—nuclear weapons produce many destructive effects. At the moment of the explosion, when the temperature of the weapon material, instantly gasified, is at the superstellar level, the pressure is millions of times the normal atmospheric pressure. Immediately, radiation, consisting mainly of gamma rays, which are a very high-energy form of electromagnetic radiation, begins to stream outward into the environment. This is called the "initial nuclear radiation," and is the first of the destructive effects of a nuclear explosion. In an air burst of a one-megaton bomb—a bomb with the explosive yield of a million tons of TNT, which is a medium-sized weapon in present-day nuclear arsenals—the initial nuclear radiation can kill unprotected human beings in an area of some six square miles. Virtually simultaneously with the initial nuclear radiation, in a second destructive effect of the explosion, an electromagnetic pulse is generated by the intense gamma radiation acting on the air. In a high-altitude detonation, the pulse can knock out electrical equipment over a wide area by inducing a powerful surge of voltage through various conductors, such as antennas, overhead power lines, pipes, and railroad tracks. The Defense Department's Civil Preparedness Agency reported in 1977 that a single multi-kiloton nuclear weapon detonated one hundred and twenty-five miles over Omaha, Nebraska, could generate an electromagnetic pulse strong enough to damage solid-state electrical circuits throughout the entire continental United States and in parts of Canada and Mexico, and thus threaten to bring the economies of these countries to a halt. When the fusion and fission reactions have blown themselves out, a fireball takes shape. As it expands, energy is absorbed in the form of X rays by the surrounding air, and then the air re-radiates a portion of that energy into the environment in the form of the thermal pulse—a wave of blinding light and intense heat—which is the third of the destructive effects of a nuclear explosion. (If the burst is low enough, the fireball touches the ground, vaporizing or incinerating almost everything within it.) The thermal pulse of a one-megaton bomb lasts for about ten seconds and can cause second-degree burns in exposed human beings at a distance of nine and a half miles, or in an area of more than two hundred and eighty square miles, and that of a twenty-megaton bomb (a large weapon by modern standards) lasts for about twenty seconds and can produce the same consequences at a distance of twenty-eight miles, or in an area of two thousand four hundred and sixty square miles. As the fireball expands, it also sends out a blast wave in all directions, and this is the fourth destructive effect of the explosion. The blast wave of an air-burst one-megaton bomb can flatten or severely damage all but the strongest buildings within a radius of four and a half miles, and that of a twenty-megaton bomb can do the same within a radius of twelve miles. As the fireball burns, it rises, condensing water from the surrounding atmosphere to form the characteristic mushroom cloud. If the bomb has been set off on the ground or close enough to it so that the fireball touches the surface, in a so-called ground burst, a crater will be formed, and tons of dust and debris will be fused with the intensely radioactive fission products and sucked up into the mushroom cloud. This mixture will return to earth as radioactive fallout, most of it in the form of fine ash, in the fifth destructive effect of the explosion. Depending upon the composition of the surface, from forty to seventy per cent of this fallout—often called the "early" or "local" fallout—descends to earth within about a day of the explosion, in the vicinity of the blast and downwind from it, exposing human beings to radiation disease, an illness that is fatal when exposure is intense. Air bursts may also produce local fallout, but in much smaller quantities. The lethal range of the local fallout depends on a number of circumstances, including the weather, but under average conditions a one-megaton ground blast would, according to the report by the Office of Technology Assessment, lethally contaminate over a thousand square miles. (A lethal dose, by convention, is considered to be the amount of radiation that, if delivered over a short period of time, would kill half the able-bodied young adult population.)



The initial nuclear radiation, the electromagnetic pulse, the thermal pulse, the blast wave, and the local fallout may be described as the local primary effects of nuclear weapons. Naturally, when many bombs are exploded the scope of these effects is increased accordingly. But in addition these primary effects produce innumerable secondary effects on societies and natural environments, some of which may be even more harmful than the primary ones. To give just one example, nuclear weapons, by flattening and setting fire to huge, heavily built-up areas, generate mass fires, and in some cases these may kill more people than the original thermal pulses and blast waves. Moreover, there are—quite distinct from both the local primary effects of individual bombs and their secondary effects—global primary effects, which do not become significant unless thousands of bombs are detonated all around the earth. And these global primary effects produce innumerable secondary effects of their own throughout the ecosystem of the earth as a whole. For a full-scale holocaust is more than the sum of its local parts; it is also a powerful direct blow to the ecosphere. In that sense, a holocaust is to the earth what a single bomb is to a city. Three grave direct global effects have been discovered so far. The first is the "delayed," or "worldwide," fallout. In detonations greater than one hundred kilotons, part of the fallout does not fall to the ground in the vicinity of the explosion but rises high into the troposphere and into the stratosphere, circulates around the earth, and then, over months or years, descends, contaminating the whole surface of the globe—although with doses of radiation far weaker than those delivered by the local fallout. Nuclear-fission products comprise some three hundred radioactive isotopes, and though some of them decay to relatively harmless levels of radioactivity within a few hours, minutes, or even seconds, others persist to emit radiation for up to millions of years. The short-lived isotopes are the ones most responsible for the lethal effects of the local fallout, and the long-lived ones are responsible for the contamination of the earth by stratospheric fallout. The energy released by all fallout from a thermonuclear explosion is about five per cent of the total. By convention, this energy is not calculated in the stated yield of a weapon, yet in a ten-thousand-megaton attack the equivalent of five hundred megatons of explosive energy, or forty thousand times the yield of the Hiroshima bomb, would be released in the form of radioactivity. This release may be considered a protracted afterburst, which is dispersed into the land, air, and sea, and into the tissues, bones, roots, stems, and leaves of living things, and goes on detonating there almost indefinitely after the explosion. The second of the global effects that have been discovered so far is the lofting, from ground bursts, of millions of tons of dust into the stratosphere; this is likely to produce general cooling of the earth's surface. The third of the global effects is a predicted partial destruction of the layer of ozone that surrounds the entire earth in the stratosphere. A nuclear fireball, by burning nitrogen in the air, produces large quantities of oxides of ni-

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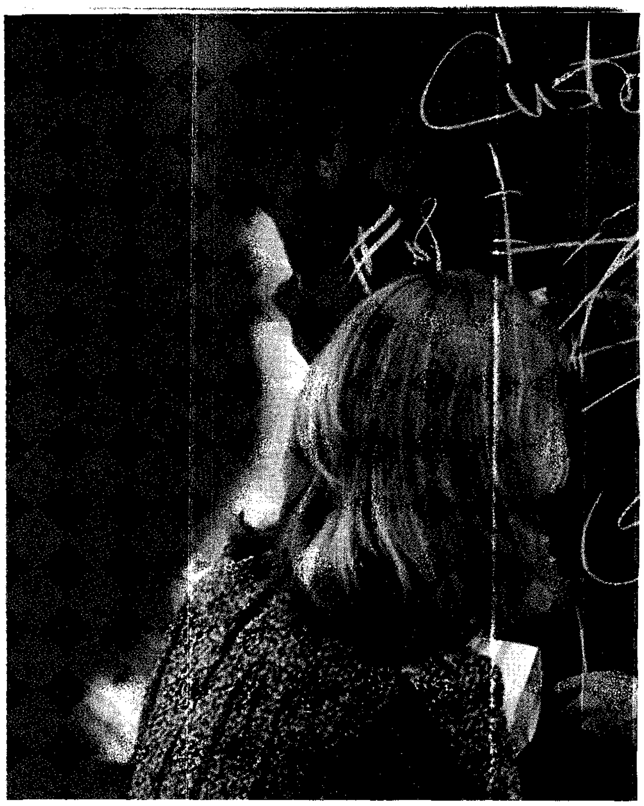

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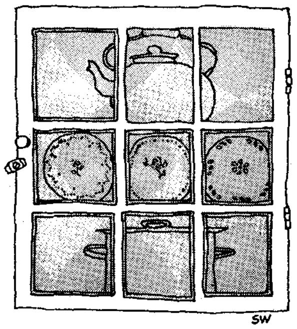
trogen. These are carried by the heat of the blast into the stratosphere, where, through a series of chemical reactions, they bring about a depletion of the ozone layer. Such a depletion may persist for years. The 1975 N.A.S. report has estimated that in a holocaust in which ten thousand megatons were detonated in the Northern Hemisphere the reduction of ozone in this hemisphere could be as high as seventy per cent and in the Southern Hemisphere as high as forty per cent, and that it could take as long as thirty years for the ozone level to return to normal. The ozone layer is crucial to life on earth, because it shields the surface of the earth from lethal levels of ultraviolet radiation, which is present in sunlight. Glasstone remarks simply, "If it were not for the absorption of much of the solar ultraviolet radiation by the ozone, life as currently known could not exist except possibly in the ocean." Without the ozone shield, sunlight, the life-giver, would become a life-extinguisher. In judging the global effects of a holocaust, therefore, the primary question is not how many people would be irradiated, burned, or crushed to death by the immediate effects of the bombs but how well the ecosphere, regarded as a single living entity, on which all forms of life depend for their continued existence, would hold up. The issue is the habitability of the earth, and it is in this context, not in the context of the direct slaughter of hundreds of millions of people by the local effects, that the question of human survival arises.

Usually, people wait for things to occur before trying to describe them. (Futurology has never been a very respectable field of inquiry.) But since we cannot afford under any circumstances to let a holocaust occur, we are forced in this one case to become the historians of the future—to chronicle and commit to memory an event that we have never experienced and must never experience. This unique endeavor, in which foresight is asked to perform a task usually reserved for hindsight, raises a host of special difficulties. There is a categorical difference, often overlooked, between trying to describe an event that has already happened (whether it is Napoleon's invasion of Russia or the pollution of the environment by acid rain) and trying to describe one that has yet to happen—and one, in addition, for which there is no precedent, or even near-precedent, in history. Lacking experience to guide our thoughts and impress itself on our feelings, we resort to speculation. But speculation, however brilliantly it may be carried out, is at best only a poor substitute for experience. Experience gives us facts, whereas in pure speculation we are thrown back on theory, which has never been a very reliable guide to future events. Moreover, experience engraves its lessons in our hearts through suffering and the other consequences that it has for our lives; but speculation leaves our lives untouched, and so gives us leeway to reject its conclusions, no matter how well argued they may be. (In the world of strategic theory, in particular, where strategists labor to simulate actual situations on the far side of the nuclear abyss, so that generals and statesmen can prepare to make their decisions in case the worst happens, there is sometimes an unfortunate tendency to mistake pure ratiocination for reality, and to pretend to a knowledge of the future that it is not given to human beings to have.) Our knowledge of the local primary effects of the bombs, which is based both on the physical principles that made their construction possible and on experience gathered from the bombings of Hiroshima and Nagasaki and from testing, is quite solid. And our knowledge of the extent of the local primary effects of many weapons used together, which is obtained simply by using the multiplication table, is also solid: knowing that the thermal pulse of a twenty-megaton bomb can give people at least second-degree burns in an area of two thousand four hundred and sixty square miles, we can easily figure out that the pulses of a hundred twenty-megaton bombs can give people at least second-degree burns in an area of two hundred and forty-six thousand square miles. Nevertheless, it may be that our knowledge even of the primary effects is still incomplete, for during our test program new ones kept being discovered. One example is the electromagnetic pulse, whose importance was not recognized until around 1960, when, after more than a decade of tests, scientists realized that this effect accounted for unexpected electrical failures that had been occurring all along in equipment around the test sites. And it is only in recent years that the Defense Department has been trying to take account strategically of this startling capacity of just one bomb to put the technical equipment of a whole continent out of action.

When we proceed from the local effects of single explosions to the effects of thousands of them on societies and environments, the picture clouds considerably, because then we go beyond both the certainties of physics and our slender base of experience, and speculatively encounter the full complexity of human affairs and of the biosphere. Looked at in its entirety, a nuclear holocaust can be said to assail human life at three levels: the level of individual life, the level of human society, and the level of the natural environment—including the environment of the earth as a whole. At none of these levels can the destructiveness of nuclear weapons be measured in terms of firepower alone. At each level, life has both considerable recuperative powers, which might restore it even after devastating injury, and points of exceptional vulnerability, which leave it open to sudden, wholesale, and permanent collapse, even when comparatively little violence has been applied. Just as a machine may break down if one small part is removed, and a person may die if a single artery or vein is blocked, a modern technological society may come to a standstill if its fuel supply is cut off, and an ecosystem may collapse if its ozone shield is depleted. Nuclear weapons thus do not only kill directly, with their tremendous violence, but also kill indirectly, by breaking down the man-made and the natural systems on which individual lives collectively depend. Human beings require constant provision and care, supplied both by their societies and by the natural environment, and if these are suddenly removed people will die just as surely as if they had been struck by a bullet. Nuclear weapons are unique in that they attack the support systems of life at every level. And these systems, of course, are not isolated from each other but are parts of a single whole: ecological collapse, if it goes far enough, will bring about social collapse, and social collapse will bring about individual deaths. Furthermore, the destructive consequences of a nuclear attack are immeasurably compounded by the likelihood that all or



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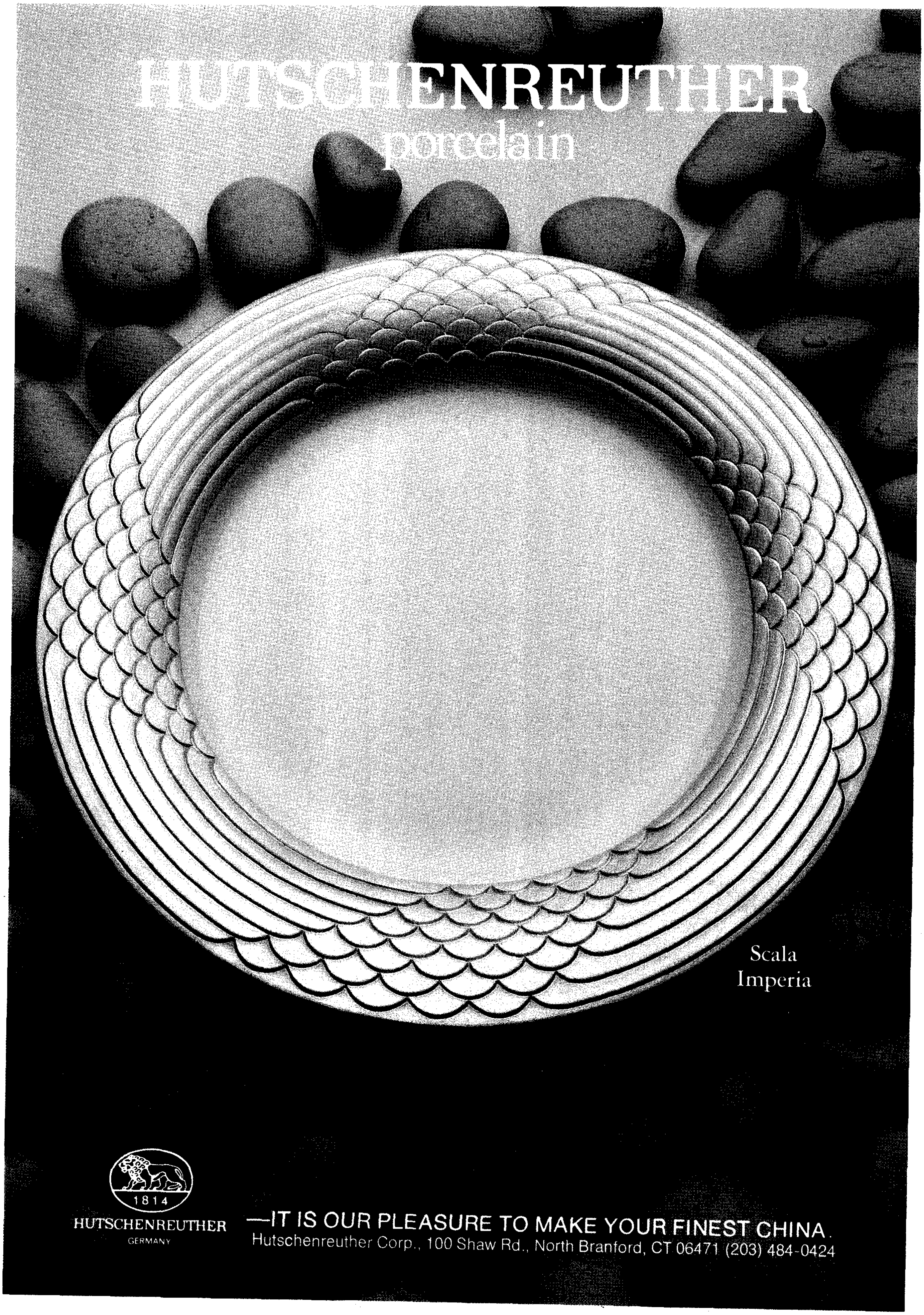

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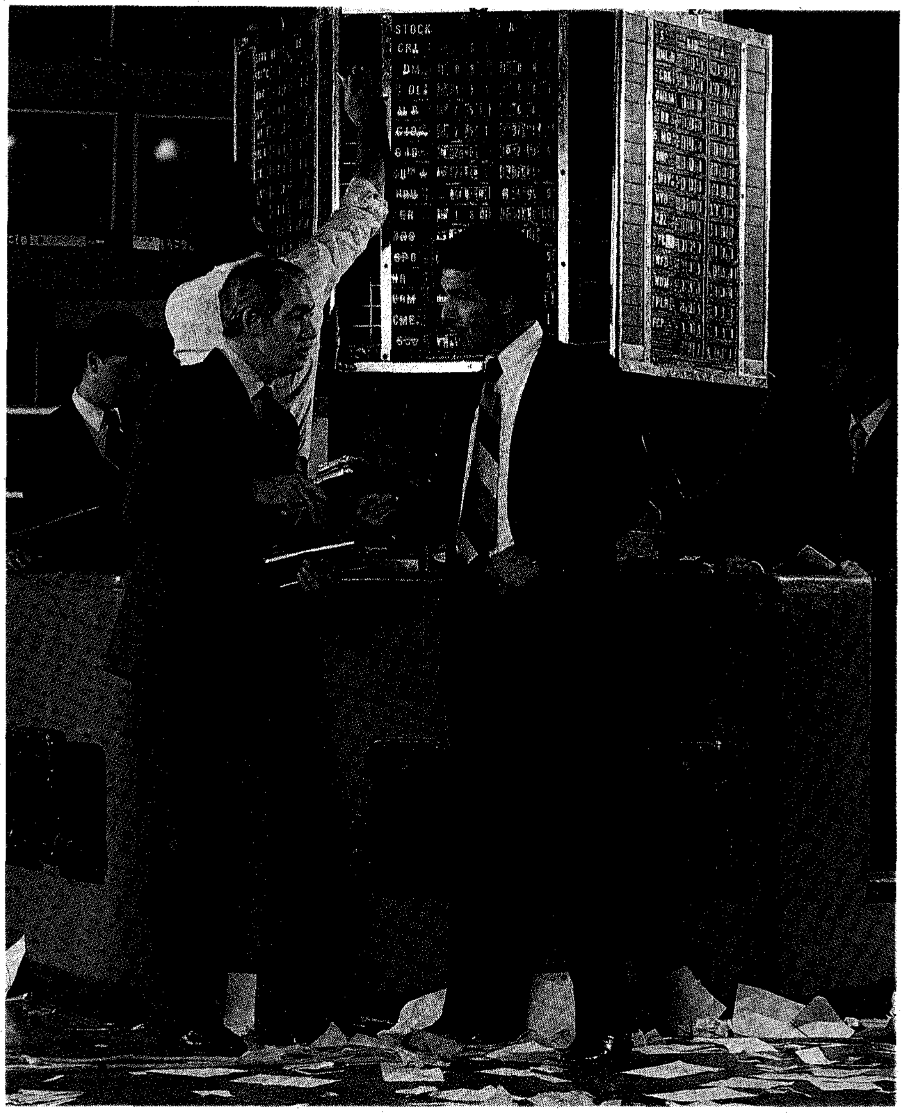

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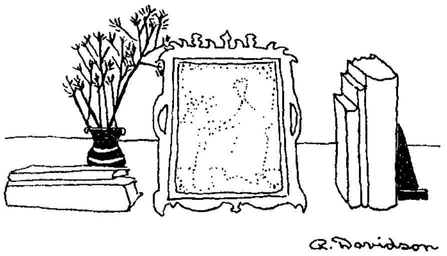
most of the bombs will be detonated within the space of a few hours, in a single huge concussion. Normally, a locality devastated by a catastrophe, whether natural or man-made, will sooner or later receive help from untouched outside areas, as Hiroshima and Nagasaki did after they were bombed; but a nuclear holocaust would devastate the "outside" areas as well, leaving the victims to fend for themselves in a shattered society and natural environment. And what is true for each city is also true for the earth as a whole: a devastated earth can hardly expect "outside" help. The earth is the largest of the support systems for life, and the impairment of the earth is the largest of the perils posed by nuclear weapons.

The incredible complexity of all these effects, acting, interacting, and interacting again, precludes confident detailed representation of the events in a holocaust. We deal inevitably with approximations, probabilities, even guesses. However, it is important to point out that our uncertainty pertains not to *whether* the effects will interact, multiplying their destructive power as they do so, but only to *how*. It follows that our almost built-in bias, determined by the limitations of the human mind in judging future events, is to underestimate the harm. To fear interactive consequences that we cannot predict, or even imagine, may not be impossible, but it is very difficult. Let us consider, for example, some of the possible ways in which a person in a targeted country might die. He might be incinerated by the fireball or the thermal pulse. He might be lethally irradiated by the initial nuclear radiation. He might be crushed to death or hurled to his death by the blast wave or its debris. He might be lethally irradiated by the local fallout. He might be burned to death in a firestorm. He might be injured by one or another of these effects and then die of his wounds before he was able to make his way out of the devastated zone in which he found himself. He might die of starvation, because the economy had collapsed and no food was being grown or delivered, or because existing local crops had been killed by radiation, or because the local ecosystem had been ruined, or because the ecosphere of the earth as a whole was collapsing. He might die of cold, for lack of heat and clothing, or of exposure, for lack of shelter. He might be killed by people seeking food or shelter that he had obtained. He might die of an illness spread in an epidemic. He might be killed by exposure to the sun if he stayed outside too long following serious ozone depletion. Or he might be killed by any combination of these perils. But while there is almost no end to the ways to die in and after a holocaust, each person has only one life to lose: someone who has been killed by the thermal pulse can't be killed again in an epidemic. Therefore, anyone who wishes to describe a holocaust is always at risk of depicting scenes of devastation that in reality would never take place, because the people in them would already have been killed off in some earlier scene of devastation. The task is made all the more confusing by the fact that causes of death and destruction do not exist side by side in the world but often encompass one another, in widening rings. Thus, if it turned out that a holocaust rendered the earth uninhabitable by human beings, then all the more immediate forms of death would be nothing more than redundant preliminaries, leading up to the extinction of the whole species by a hostile environment. Or if a continental ecosystem was so thoroughly destroyed by a direct attack that it could no longer sustain a significant human population, the more immediate causes of death would again decline in importance. In much the same way, if an airplane is hit by gunfire, and thereby caused to crash, dooming all the passengers, it makes little difference whether the shots also killed a few of the passengers in advance of the crash. On the other hand, if the larger consequences, which are less predictable than the local ones, failed to occur, then the local ones would have their full importance again.

Faced with uncertainties of this kind, some analysts of nuclear destruction have resorted to fiction, assigning to the imagination the work that investigation is unable to do. But then the results are just what one would expect: fiction. An approach more appropriate to our intellectual circumstances would be to acknowledge a high degree of uncertainty as an intrinsic and extremely important part of dealing with a possible holocaust. A nuclear holocaust is an event that is obscure because it is future, and uncertainty, while it has to be recognized in all calculations of future events, has a special place in calculations of a nuclear holocaust, because a holocaust is something that we aspire to keep in the future forever, and never to permit into the present. You might say that uncertainty, like the thermal pulses or the blast waves, is one of the features of a holocaust. Our procedure, then, should be not to insist on a precision that is beyond our grasp but to inquire into the rough probabilities of various results insofar as we can judge them, and then to ask ourselves what our political responsibilities are in the light of these probabilities. This embrace of investigative modesty—this acceptance of our limited ability to predict the consequences of a holocaust—would itself be a token of our reluctance to extinguish ourselves.

There are two further aspects of a holocaust which, though they do not further obscure the factual picture, nevertheless vex our understanding of this event. The first is that although in imagination we can try to survey the whole prospective scene of destruction, inquiring into how many would live and how many would die and how far the collapse of the environment would go under attacks of different sizes, and piling up statistics on how many square miles would be lethally contaminated, or what percentage of the population would receive first-, second-, or third-degree burns, or be trapped in the rubble of its burning houses, or be irradiated to death, no one actually experiencing a holocaust would have any such overview. The news of other parts necessary to put together that picture would be one of the things that were immediately lost, and each surviving person, his vision drastically foreshortened by the collapse of his world, and his impressions clouded by his pain, shock, bewilderment, and grief, would see only as far as whatever scene of chaos and agony happened to lie at hand. For it would not be only such abstractions as "industry" and "society" and "the environment" that would be destroyed in a nuclear holocaust; it would also be, over and over again, the small collections of cherished things, known landscapes, and beloved people that made up the immediate contents of individual lives.

The other obstacle to our understanding is that when we strain to picture what the scene would be like after a holocaust we tend to forget that for most people, and perhaps for all, it wouldn't be *like* anything, because they would be dead. To depict the scene as it would appear to the living is to that extent a falsification, and the greater the number killed, the greater the falsification. The right vantage point from which to view a holocaust is that of a corpse, but from that vantage point, of course, there is nothing to report.



THE specific train of events that might lead up to an attack is, obviously, among the unpredictables, but a few general possibilities can be outlined. One would be a wholly accidental attack, triggered by human error or mechanical failure. On three occasions in the last couple of years, American nuclear forces were placed on the early stages of alert: twice because of the malfunctioning of a computer chip in the North American Air Defense Command's warning system, and once when a test tape depicting a missle attack was inadvertently inserted in the system. The greatest danger in computer-generated misinformation and other mechanical errors may be that one error might start a chain reaction of escalating responses between command centers, leading, eventually, to an attack. If in the midst of a crisis Country A was misled by its computers into thinking that Country B was getting ready to attack, and went on alert, Country B might notice this and go on alert in response. Then Country A, observing the now indubitably real alert of Country B, might conclude that its computers had been right after all, and increase its alert. This move would then be noticed by Country B, which would, in turn, increase its alert, and so on, until either the mistake was straightened out or an attack was launched. A holocaust might also be touched off by conventional or nuclear hostilities between smaller powers, which could draw in the superpowers. Another possibility would be a deliberate, unprovoked preemptive strike by one side against the other. Most observers regard an attack of this kind as exceedingly unlikely in either direction, but the logic of present nuclear strategy drives both sides to prepare to respond to one, for the central tenet of nuclear strategy is that each side will refrain from launching an all-out first strike against the other only if it knows that even after it has done so the other side will retain forces sufficient to launch an utterly devastating counterblow. What is more likely, in the opinion of many, is a preëmptive strike launched in the midst of an international crisis. Neither quite planned (in the sense of being a cold-blooded, premeditated strike, out of the blue) nor quite accidental (in the sense of being caused by technical failure), such an attack would be precipitated by a combination on one side or both sides of belligerency, reckless actions, miscalculation, and fear of a first strike by the other side. Each side's possible fear of a first strike by the other side has become an element of increasing danger in recent years. Modern weapons, such as the Soviet SS-18 and SS-19 and the improved American Minuteman III missile and planned MX missile, have a greatly increased ability to destroy enemy missiles in their silos, thus adding to the incentive on both sides to strike first. The peril is that in a crisis either side, fearful of losing the preëmptive advantage, would go ahead and order a first strike.

It was during an international crisis—the Cuban missile crisis, in 1962—that the world apparently came as close as it has yet come to a nuclear holocaust. On that occasion, and perhaps on that occasion alone, a dread of nuclear doom became palpable not only in the councils of power but among ordinary people around the world. At the height of the crisis, it is reported, President John Kennedy believed that the odds on the occurrence of a holocaust were between one out of three and even. In the memoir "Thirteen Days," Robert Kennedy, the President's brother, who was Attorney General at the time, and who advised the President in the crisis, offered a recollection of the moments of greatest peril. President Kennedy had ordered a blockade of all shipping to Cuba, where, American intelligence had found, the Soviet Union was emplacing missiles capable of carrying nuclear warheads. Missile crews in the United States had been placed on maximum alert. Now, at a few minutes after ten o'clock on the morning of October 24th, two Russian ships, accompanied by a Russian submarine, had approached to within a few miles of the blockade. Robert Kennedy wrote in his memoir:

> I think these few minutes were the time of gravest concern for the President. Was the world on the brink of a holocaust? Was it our error? A mistake? Was there something further that should have been done? Or not done? His hand went up to his face and covered his mouth. He opened and closed his fist. His face seemed drawn, his eyes pained, almost gray. We stared at each other across the table. For a few fleeting seconds, it was almost as though no one else was there and he was no longer the President.
>
> Inexplicably, I thought of when he was ill and almost died; when he lost his child; when we learned that our oldest brother had been killed; of personal times of strain and hurt. . . . We had come to the time of final decision. . . . I felt we were on the edge of a precipice with no way off. This time, the moment was now—not next week—not tomorrow, "so we can have another meeting and decide;" not in eight hours, "so we can send another message to Khrushchev and perhaps he will finally understand." No, none of that was possible. One thousand miles away in the vast expanse of the Atlantic Ocean the final decisions were going to be made in the next few minutes. President Kennedy had initiated the course of events, but he no longer had control over them.

Any number of future crises that would lead to an attack can be pictured, but I would like to mention one possible category that seems particularly dangerous. In the theory of nuclear deterrence, each side would ideally deter attacks at every level of violence with a deterrent force at the same level. Thus, conventional attacks would be deterred with conventional forces, tactical attacks would be deterred with tactical forces, and strategic attacks would be deterred with strategic forces. The theoretical advantage of matching forces in this fashion would be that the opening moves in hypothetical hostilities would not automatically lead to escalation—for example, by leading the side weaker in conventional forces to respond to a conventional attack with nuclear weapons. However, the facts of geography make such ideal deterrent symmetry impracticable. The Soviet Union's proximity both to Western Europe and to the Middle East gives it a heavy conventional preponderance in those parts of the world. Therefore, throughout the postwar period it has been American policy to deter a Soviet conventional attack in Europe with tactical nuclear arms. And in January of 1980 President Carter, in effect, extended the policy to include protection of the nations around the Persian Gulf. In his State of the Union address for 1980, Carter said, "An attempt by any outside force to gain control of the Persian Gulf region will be regarded as an assault on the vital interests of the United States of America. And such an assault will be repelled by any means necessary, including military force." Since the United States clearly lacked the conventional power to repel a Soviet attack in a region near the borders of the Soviet Union, "any means" could refer to nothing but nuclear arms. The threat was spelled out explicitly shortly after the speech, in a story in the New York *Times*—thought to be a leak from the Administration—about a 1979 Defense Department "study," which, according to the *Times*, said that American conventional forces could not stop a Soviet thrust into northern Iran, and that "to prevail in an Iranian scenario, we might have to threaten or make use of tactical nuclear weapons." The words of this study put the world on notice that the use of nuclear arms not only was contemplated in past crises but will continue to be contemplated in future ones.

IT is possible to picture a nuclear attack of any shape or size. An attack might use all the weapons at the attacker's disposal or any portion of them. It might be aimed at military targets, at industry, at the population, or at all or some combination of these. The attack might be mainly air-burst, and would increase the range of severe damage from the blast waves, or it might be mainly ground-burst, to destroy hard targets such as land-based nuclear missiles or command-and-control centers, or to deliver the largest possible amount of fallout, or it might combine air bursts and ground bursts in any proportion. It could be launched in the daytime or at night, in summer or in winter, with warning or without warning. The sequence of events once hostilities had begun also

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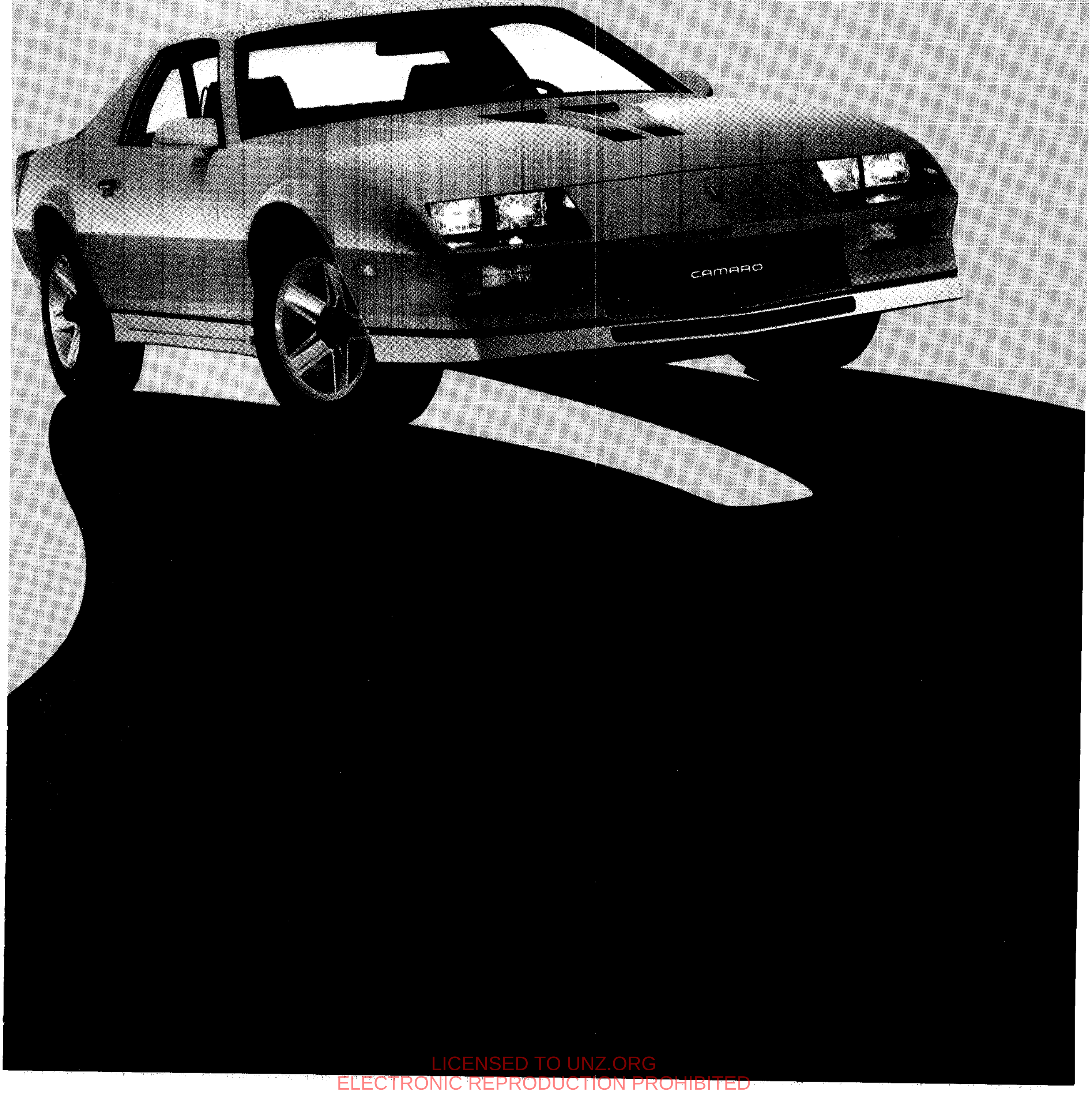

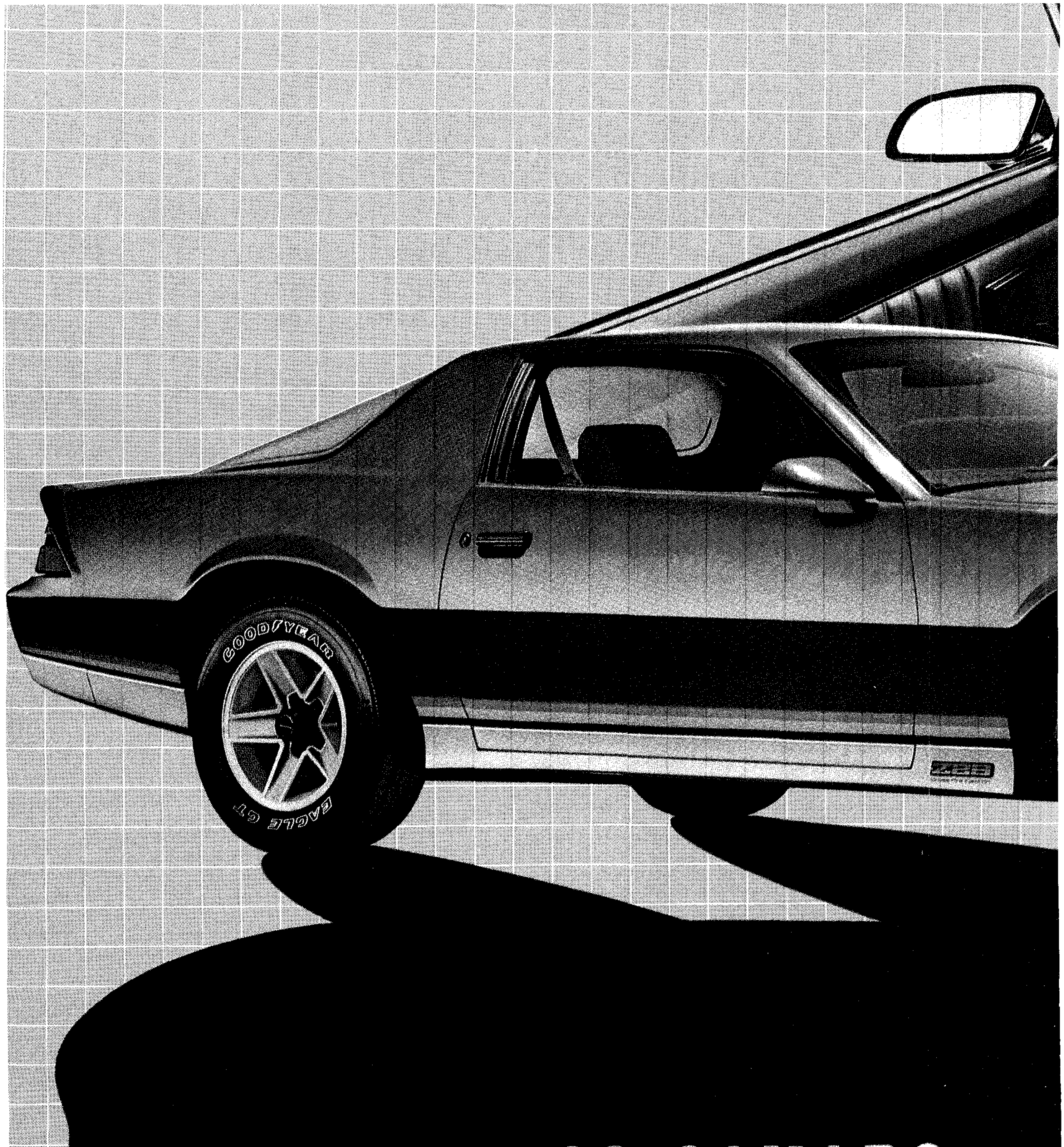
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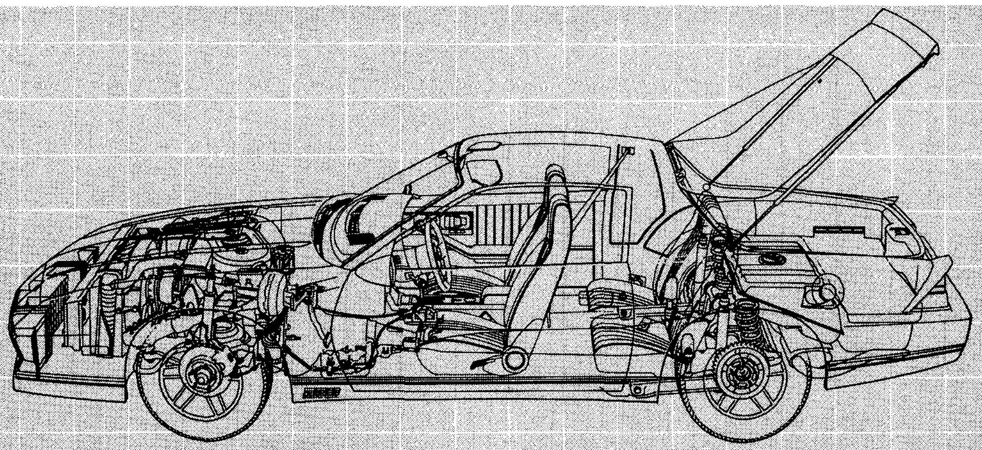

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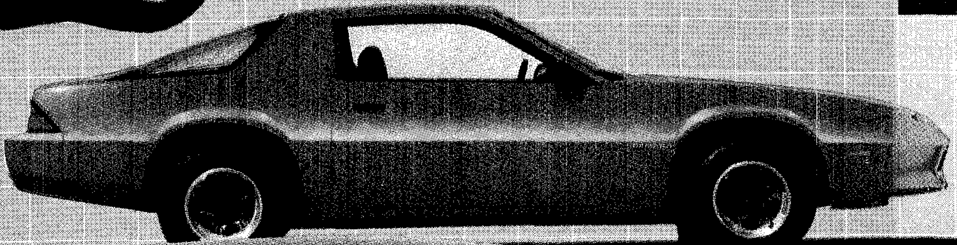

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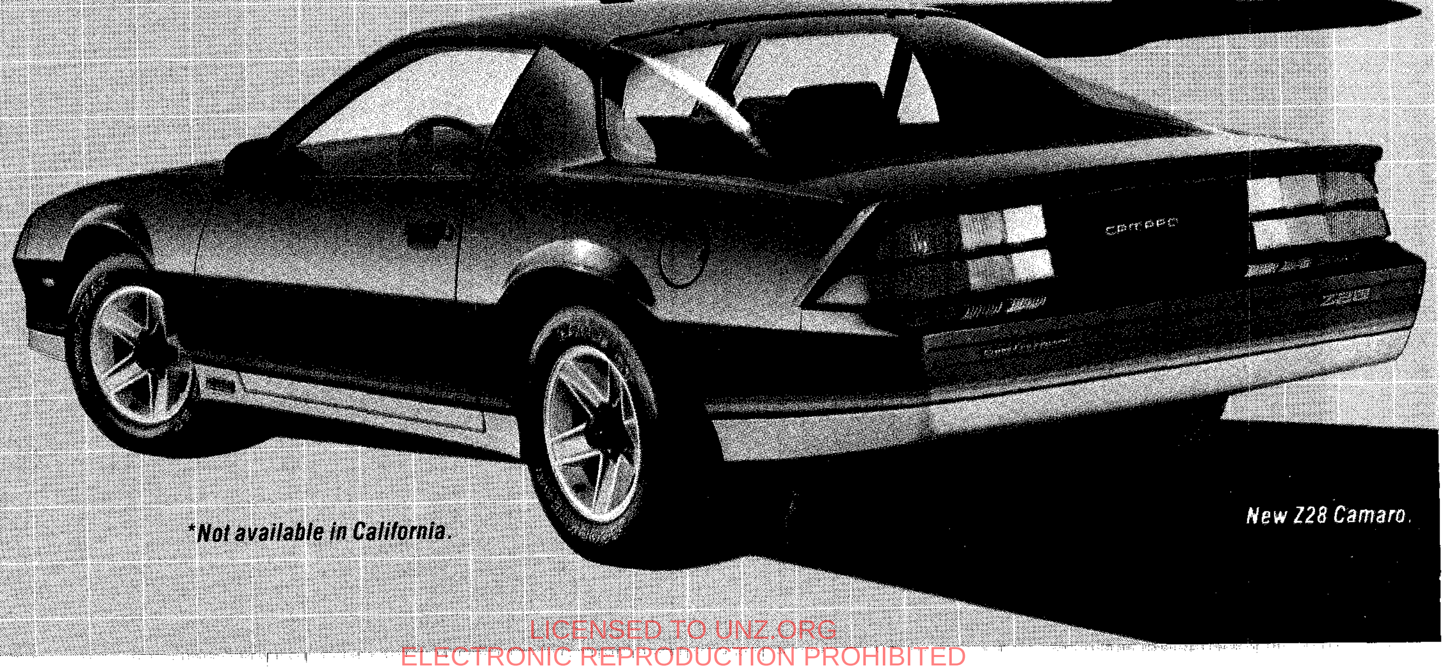

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lies open. For example, it seems quite possible that the leaders of a nation that had just suffered a nuclear attack would be sparing in their response, tailoring it to political objectives rather than to the vengeful aim of wiping out the society whose leaders had launched the attack. On the other hand, they might retaliate with all the forces at their disposal, as they say they will do. Then again, the two sides might expend their forces gradually, in a series of ad-hoc "exchanges," launched in an atmosphere of misinformation and intellectual and moral disorientation. The state of mind of the decision-makers might be one of calm rationality, of hatred, of shock, of hysteria, or even of outright insanity. They might follow coldly reasoned scenarios of destruction to the letter, and exterminate one another in that way. Or, for all we are able to know now, having at first hardened their "resolve" to follow the scenarios through to the end, they might suddenly reverse themselves, and proceed to the negotiating table after only incompletely destroying one another. Lacking any experience of what decisions human beings make under full-scale nuclear attack, we simply do not know what they would do.

Not surprisingly, predictions of the course of an attack are subject to intellectual fashion (there being nothing in the way of experience to guide them). In the nineteen-sixties, for example, it was widely believed that the most important attack to deter was an all-out one, but in the last few years the idea that a "limited nuclear war" might be fought has come into vogue. (The concept of limited nuclear war also had an earlier vogue, in the late nineteen-fifties, when some strategists were seeking an alternative to Secretary of State John Foster Dulles's strategy of "massive retaliation.") The premise of the limited-war theory is that nuclear hostilities can be halted at some new equilibrium in the balance of forces, before all-out attacks have been launched. In particular, it has been argued recently by nuclear theorists that the Soviet Union is now able to launch a devastating first strike at American bombers and land-based missiles, leaving the United States in the unfavorable position of having to choose between using its less accurate submarine-based missiles to directly attack Soviet society—and thus risk a direct attack on its own society in return—and doing nothing. Rather than initiate the annihilation of both societies, it is argued, American leaders might acquiesce in the Soviet first strike. But there is something dreamlike and fantastic in this concept of a wholly one-way nuclear strike, which, while leaving intact the power of the assaulted country to devastate the society of the aggressor, would somehow allow the aggressor to dictate terms. What seems to have been forgotten is that, unless one assumes that the adversary has gone insane (in which case not even the most foolproof scenarios can save us), military actions are taken with some aim in mind—for example, the aim of conquering a particular territory. This imagined first strike would in itself achieve nothing, and the moment the Soviet Union might try to achieve some actual advantage—for example, by marching into the Middle East to seize its oil fields—two or three nuclear weapons from among the thousands remaining in American arsenals would suffice to put a quick end to the undertaking. Or if the United States retaliated with only ten bombs on Soviet cities, holding back the rest, the Soviet Union would suffer unprecedented losses while gaining nothing. In other words, in this scenario—and, indeed, in any number of other scenarios for "limited nuclear war" which could be mentioned—strategic theory seems to have taken on a weird life of its own, in which the weapons are pictured as having their own quarrel to settle, irrespective of mere human purposes. In general, in the theoretically sophisticated but often humanly deficient world of nuclear strategic theory it is likely to be overlooked that the outbreak of nuclear hostilities in itself assumes the collapse of every usual restraint of reason and humanity. Once the mass killing of a nuclear holocaust had begun, the scruples, and even the reckonings of self-interest, that normally keep the actions of nations within certain bounds will by definition have been trampled down, and will probably offer little further protection for anybody. In the unimaginable mental and spiritual climate of the world at that point it is hard to imagine what force could be counted on to hold the world back from all-out destruction.

However, it would be misleading to suggest that once one nuclear weapon had been used it would be inevitable for all of them to be used. Rather, the point is that once a catastrophe that we now find "unthinkable" actually commenced, people would act in ways that are unforeseeable by theorists—or, for that matter, by the future actors themselves. Predictions about the size and form of a nuclear holocaust are really predictions about human decisions, and these are notoriously incalculable in advance—especially when the decisions in question are going to be made in the midst of unimaginable mayhem. Secretary of Defense Robert McNamara probably said the last word on this subject when he remarked before the House Armed Services Committee in 1963, in regard to a possible defense of Europe, that once the first tactical nuclear weapon had been used the world would have been launched into "a vast unknown." Therefore, in picturing a Soviet attack on the United States I shall not venture any predictions concerning the shape and size of the attack, since to do so, it seems to me, would be to pretend to a kind of knowledge that we are incapable of. Instead, I shall simply choose two basic assumptions—using the word to mean not predictions but postulates. The first assumption is that most of the Soviet strategic forces are used in the attack, and the second is that the attack is aimed at military facilities, industry, and the population centers of the United States. I have chosen these assumptions not because I "predict" an attack of this kind, which is the most damaging of the attacks that appear to have a likely chance of occurring, but because, in the absence of any basis for confident prediction, and, in particular, of any reliable assurance that an attack would remain "limited," they are the only assumptions that represent the full measure of our peril. At the very least, they are not far-fetched. The first assumption is supported by many statements by leaders on both sides. The Soviet government, which, of course, is one of the actors concerned, has frequently stated the view that nuclear hostilities cannot be limited, and Defense Secretary Harold Brown also said, in 1977, that a nuclear conflict probably could not be limited. Concerning the second assumption, the significant point is that the fundamental logic of the strategy of both sides is, in McNamara's words, to hold not just the military forces of the other side hostage but also its "society as a whole." Just how the strategists on both sides achieve this is unknown, but it seems unwarranted to suppose that there will be much relief for either population in the merciful sentiments of targeters.

A further set of assumptions that influence one's judgment of the consequences of a holocaust concerns the possibility of civil defense. These assumptions also depend in part on certain circumstances that are unknowable in advance, such as whether the attack occurs in the daytime or at night, but they also depend on circumstances that are more or less built into the situation, and can therefore be predicted. The two main components of a conceivable civil defense against nuclear attack are evacuation and sheltering. In a protracted crisis, a country might seek to protect its population by evacuating its cities and towns before any attack had actually been launched; but, for a variety of reasons, such a strategy seems impracticable or useless. To begin with, an enemy that was bent on attacking one's population might retarget its missiles against people in the places to which they had fled. Also, during the days of evacuation people would be more vulnerable to attack than they were even in their cities. (Probably the worst assumption regarding evacuation would be that the attack came while evacuation was under way.) A further disadvantage of a policy of evacuation is that it would offer the foe a means of utterly disrupting the society by threats alone, since an evacuated society would be one that had stopped functioning for any other purpose. Shelters appear to be no more promising than evacuation. The Soviet missiles closest to the United States, which are stationed on submarines several hundred miles from our shores, can deliver their warheads on coastal targets about ten minutes after they are fired, and on inland targets a few minutes later. The intercontinental ballistic missiles, which are all launched from within the Soviet Union, would arrive fifteen or twenty minutes after that. The bombers would arrive in several hours. But, according to the Arms Control and Disarmament Agency, it requires fifteen minutes after missiles have been launched for the earliest warnings to be given to the population. Even assuming—very optimistically, I think—that it would take only another fifteen minutes or so for any significant number of people to become aware of the warnings and go to shelters, a surprise attack would indeed catch the great majority of people by surprise.

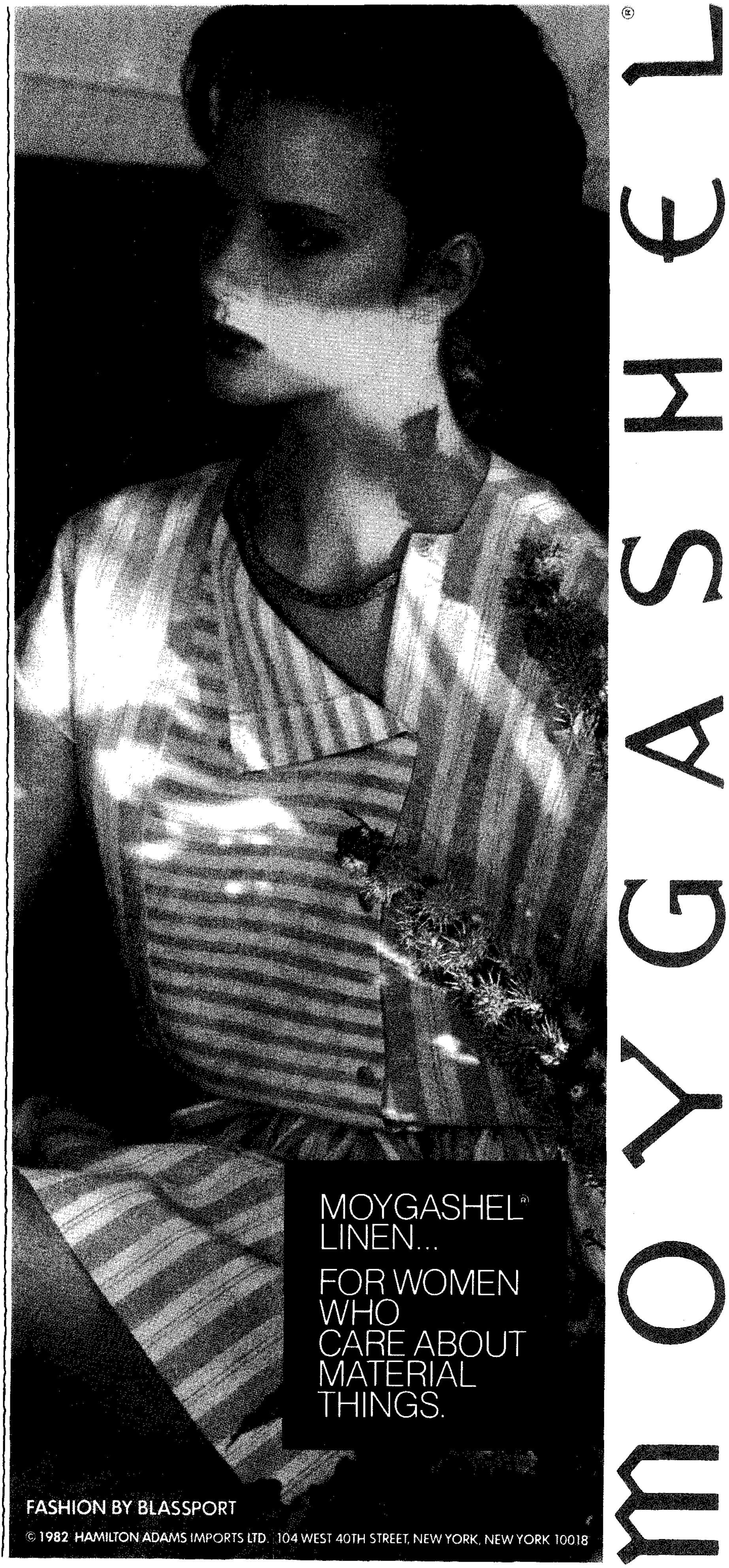
For most people, however, the lack of any opportunity to proceed to shelters would be without importance in any case, since shelters, even if they existed, would be of no use. It is now commonly acknowledged that economically feasible shelters cannot provide protection against the blast, heat, intense radiation, and mass fires that would probably occur in densely populated regions of the country—that such shelters could save lives only in places that were subjected to nothing worse than modest amounts of fallout. Furthermore, there is a very serious question whether many people would survive in the long run even if they did manage to save themselves in the short run by sealing themselves up in shelters for several weeks or months. Finally, it seems worth mentioning that, whatever the potential value of shelters might be, most existing ones either are situated in places where they are useless (in large cities, for example) or lack some or all of the following necessary equipment for an effective shelter: adequate shielding from radiation; air filters that would screen out radioactive particles; food and water to last as long as several months; an independent heating system, in places where winters are severe; medical supplies for the injured, sick, and dying, who might be in the majority in the shelters; radiation counters to measure levels of radiation outdoors, so that people could know when it was safe to leave the shelter and could determine whether food and drink were contaminated; and a burial system wholly contained within the shelter, in which to bury those who died of their injuries or illness during the shelter period.

Systems setting up evacuation procedures and shelters are often presented as humanitarian measures that would save lives in the event of a nuclear attack. In the last analysis, however, the civil-defense issue is a strategic, not a humanitarian, question. It is fundamental to the nuclear strategy of both the Soviet Union and the United States that each preserve the capacity to devastate the population of the other after itself absorbing the largest first strike that is within the other's capacity. Therefore, any serious attempt by either side to make its population safe from nuclear attack—assuming for the moment that this could be done—would be extremely likely to call forth a strategic countermove by the other side, probably taking the form of increased armament. Since the extraordinary power of modern weapons makes such compensation quite easy, it is safe to assume that for the foreseeable future the population of each side is going to remain exactly as vulnerable as the other side wants it to be.

THE yardsticks by which one can measure the destruction that will be caused by weapons of different sizes are provided by the bombings of Hiroshima and Nagasaki and American nuclear tests in which the effects of hydrogen bombs with up to sixteen hundred times the explosive yield of the Hiroshima bomb were determined. The data gathered from these experiences make it a straightforward matter to work out the distances from the explosion at which different intensities of the various effects of a bomb are likely to occur. In the back of the Glasstone book, the reader will find a small dial computer that places all this information at his fingertips. Thus, if one would like to know how deep a crater a twenty-megaton ground burst will leave in wet soil one has only to set a pointer at twenty megatons and look in a small window showing crater size to find that the depth would be six hundred feet—a hole deep enough to bury a fair-sized skyscraper. Yet this small circular computer, on which the downfall of every city on earth is distilled into a few lines and figures, can, of course, tell us nothing of the human reality of nuclear destruction. Part of the horror of thinking about a holocaust lies in the fact that it leads us to supplant the human world with a statistical world; we seek a human truth and come up with a handful of figures. The only source that gives us a glimpse of that human truth is the testimony of the survivors of the Hiroshima and Nagasaki bombings. Because the bombing of Hiroshima has been more thoroughly investigated than the bombing of Nagasaki, and therefore more information about it is available, I shall restrict myself to a brief description of that catastrophe.

On August 6, 1945, at 8:16 A.M., a fission bomb with a yield of twelve and a half kilotons was detonated about nineteen hundred feet above the central section of Hiroshima. By present-day standards, the bomb was a small one, and in today's arsenals it would be classed among the merely tactical weapons. Nevertheless, it was large enough to transform a city of some three hundred and forty thousand people into hell in the space of a few seconds. "It is no exaggeration," the authors of "Hiroshima and Nagasaki" tell us, "to say that the whole city was ruined instantaneously." In that instant, tens of thousands of people were burned, blasted, and crushed to death. Other tens of thousands suffered injuries of every description or were doomed to die of radiation sickness. The center of the city was flattened, and every part of the city was damaged. The trunks of bamboo trees as far away as five miles from ground zero—the point on the ground directly under the center of the explosion—were charred. Almost half the trees within a mile and a quarter were knocked down. Windows nearly seventeen miles away were broken. Half an hour after the blast, fires set by the thermal pulse and by the collapse of the buildings began to coalesce into a firestorm, which lasted for six hours. Starting about 9 A.M. and lasting until late afternoon, a "black rain" generated by the bomb (otherwise, the day was fair) fell on the western portions of the city, carrying radioactive fallout from the blast to the ground. For four hours at midday, a violent whirlwind, born of the strange meteorological conditions produced by the explosion, further devastated the city. The number of people who were killed outright or who died of their injuries over the next three months is estimated to be a hundred and thirty thousand. Sixty-eight per cent of the buildings in the city were either completely destroyed or damaged beyond repair, and the center of the city was turned into a flat, rubble-strewn plain dotted with the ruins of a few of the sturdier buildings.

In the minutes after the detonation, the day grew dark, as heavy clouds of dust and smoke filled the air. A whole city had fallen in a moment, and in and under its ruins were its people. Among those still living, most were injured, and of these most were burned or had in some way been battered or had suffered both kinds of injury. Those within a mile and a quarter of ground zero had also been subjected to intense nuclear radiation, often in lethal doses. When people revived enough from their unconsciousness or shock to see what was happening around them, they found that where a second before there had been a city getting ready to go about its daily business on a peaceful, warm August morning, now there was a heap of debris and corpses and a stunned mass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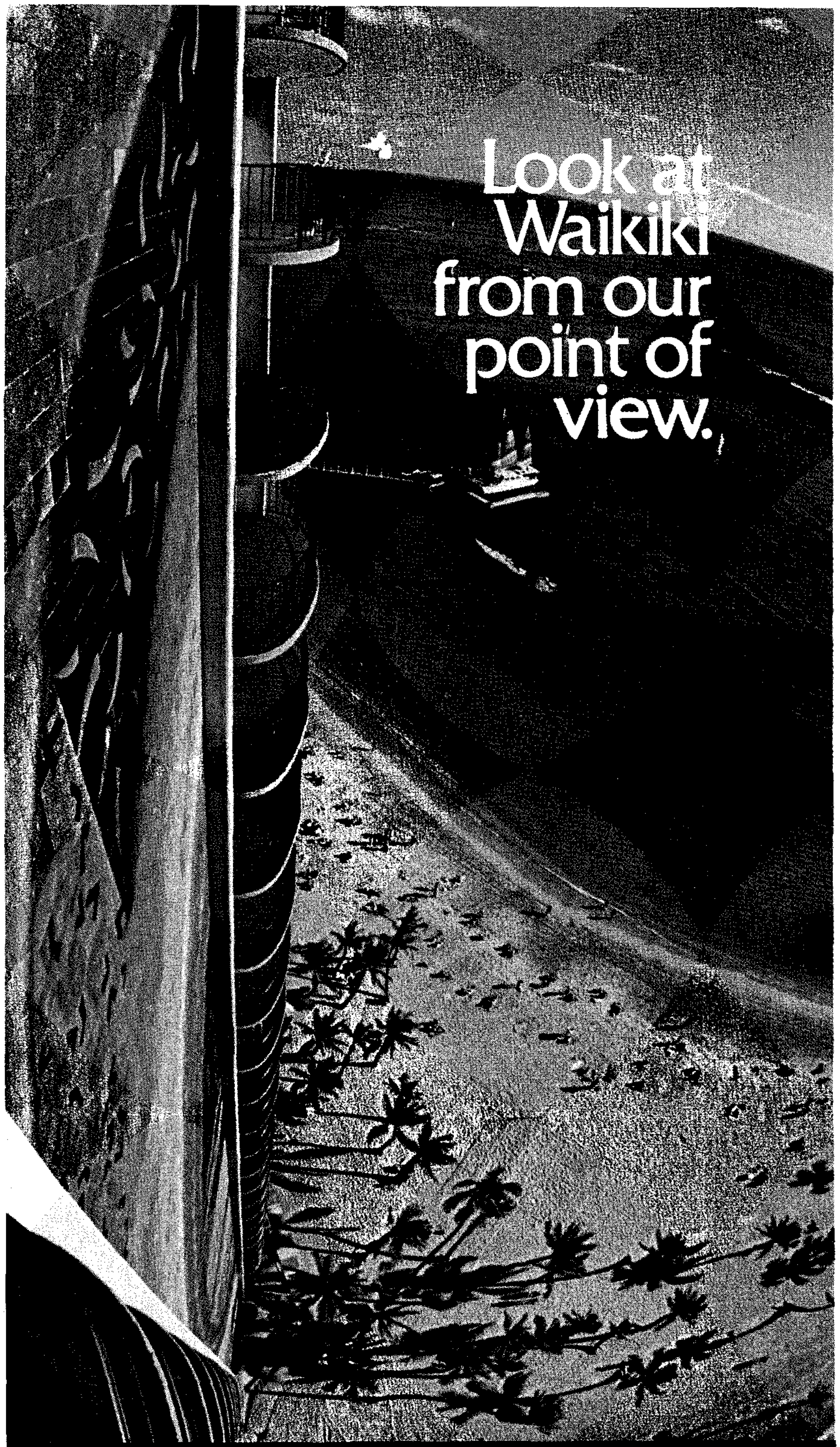

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of injured humanity. But at first, as they awakened and tried to find their bearings in the gathering darkness, many felt cut off and alone. In a recent volume of recollections by survivors called "Unforgettable Fire," in which the effects of the bombing are rendered in drawings as well as in words, Mrs. Haruko Ogasawara, a young girl on that August morning, recalls that she was at first knocked unconscious. She goes on to write:

> How many seconds or minutes had passed I could not tell, but, regaining consciousness, I found myself lying on the ground covered with pieces of wood. When I stood up in a frantic effort to look around, there was darkness. Terribly frightened, I thought I was alone in a world of death, and groped for any light. My fear was so great I did not think anyone would truly understand. When I came to my senses, I found my clothes in shreds, and I was without my wooden sandals.

Soon cries of pain and cries for help from the wounded filled the air. Survivors heard the voices of their families and their friends calling out in the gloom. Mrs. Ogasawara writes:

> Suddenly, I wondered what had happened to my mother and sister. My mother was then forty-five, and my sister five years old. When the darkness began to fade, I found that there was nothing around me. My house, the next door neighbor's house, and the next had all vanished. I was standing amid the ruins of my house. No one was around. It was quiet, very quiet—an eerie moment. I discovered my mother in a water tank. She had fainted. Crying out, "Mama, Mama," I shook her to bring her back to her senses. After coming to, my mother began to shout madly for my sister: "Eiko! Eiko!"
>
> I wonder how much time had passed when there were cries of searches. Children were calling their parents' names, and parents were calling the names of their children. We were calling desperately for my sister and listening for her voice and looking to see her. Suddenly, Mother cried "Oh Eiko!" Four or five meters away, my sister's head was sticking out and was calling my mother. . . . Mother and I worked desperately to remove the plaster and pillars and pulled her out with great effort. Her body had turned purple from the bruises, and her arm was so badly wounded that we could have placed two fingers in the wound.

Others were less fortunate in their searches and rescue attempts. In "Unforgettable Fire," a housewife describes a scene she saw:

> A mother, driven half-mad while looking for her child, was calling his name. At last she found him. His head looked like a boiled octopus. His eyes were half-closed, and his mouth was white, pursed, and swollen.

Throughout the city, parents were discovering their wounded or dead children, and children were discovering their wounded or dead parents. Kikuno Segawa recalls seeing a little girl with her dead mother:

> A woman who looked like an expectant mother was dead. At her side, a girl of about three years of age brought some water in an empty can she had found. She was trying to let her mother drink from it.

The sight of people in extremities of suffering was ubiquitous. Kinzo Nishida recalls:

> While taking my severely wounded wife out to the riverbank by the side of the hill of Nakahiro-machi, I was horrified, indeed, at the sight of a stark naked man standing in the rain with his eyeball in his palm. He looked to be in great pain, but there was nothing that I could do for him.

Many people were astonished by the sheer sudden absence of the known world. The writer Yoko Ota later wrote:

> I just could not understand why our surroundings had changed so greatly in one instant. . . . I thought it might have been something which had nothing to do with the war—the collapse of the earth, which it was said would take place at the end of the world, and which I had read about as a child.

And a history professor who looked back at the city after the explosion remarked later, "I saw that Hiroshima had disappeared."

As the fires sprang up in the ruins, many people, having found injured family members and friends, were now forced to abandon them to the flames or to lose their own lives in the firestorm. Those who left children, husbands, wives, friends, and strangers to burn often found these experiences the most awful of the entire ordeal. Mikio Inoue describes how one man, a professor, came to abandon his wife:

> It was when I crossed Miyuki Bridge that I saw Professor Takenaka, standing at the foot of the bridge. He was almost naked, wearing nothing but shorts, and he had a ball of rice in his right hand. Beyond the streetcar line, the northern area was covered by red fire burning against the sky. Far away from the line, Ote-machi was also a sea of fire.
>
> That day, Professor Takenaka had not gone to Hiroshima University, and the A-bomb exploded when he was at home. He tried to rescue his wife, who was trapped under a roofbeam, but all his efforts were in vain. The fire was threatening him also. His wife pleaded, "Run away, dear!" He was forced to desert his wife and escape from the fire. He was now at the foot of Miyuki Bridge.
>
> But I wonder how he came to hold that ball of rice in his hand. His naked figure, standing there before the flames with that ball of rice, looked to me as a symbol of the modest hopes of human beings.

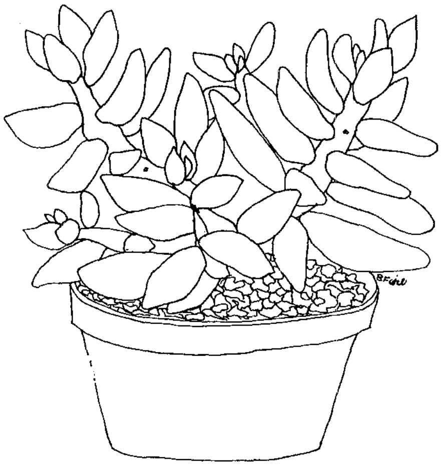
In "Hiroshima," John Hersey describes the flight of a group of German priests and their Japanese colleagues through a burning section of the city:

> The street was cluttered with parts of houses that had slid into it, and with fallen telephone poles and wires. From every second or third house came the voices of people buried and abandoned, who invariably screamed, with formal politeness, "*Tasukete kure!* Help, if you please!" The priests recognized several ruins from which these cries came as the homes of friends, but because of the fire it was too late to help.

And thus it happened that throughout Hiroshima all the ties of affection and respect that join human beings to one another were being pulled and rent by the spreading firestorm. Soon processions of the injured—processions of a kind that had never been seen before in history—began to file away from the center of the city toward its outskirts. Most of the people suffered from burns, which had often blackened their skin or caused it to sag off them. A grocer who joined one of these processions has described them in an interview with Robert Jay Lifton which appears in his book "Death in Life":

> They held their arms bent [forward] . . . and their skin—not only on their hands but on their faces and bodies, too—hung down. . . . If there had been only one or two such people . . . perhaps I would not have had such a strong impression. But wherever I walked, I met these people. . . . Many of them died along the road. I can still picture them in my mind—like walking ghosts. They didn't look like people of this world.

The grocer also recalls that because of people's injuries "you couldn't tell whether you were looking at them from in front or in back." People found it impossible to recognize one another. A woman who at the time was a girl of thirteen, and suffered disfiguring burns on her face, has recalled, "My face was so distorted and changed that people couldn't tell who I was. After a while I could call others' names but they couldn't recognize me." In addition to being injured, many people were vomiting—an early symptom of radiation sickness. For many, horrifying and unreal events occurred in a chaotic jumble. In "Unforgettable Fire," Torako Hironaka enumerates some of the things that she remembers:



> 1. Some burned work-clothes.
> 2. People crying for help with their heads, shoulders, or the soles of their feet injured by fragments of broken window glass. Glass fragments were scattered everywhere.
> 3. [A woman] crying, saying "Aigo! Aigo!" (a Korean expression of sorrow).
> 4. A burning pine tree.
> 5. A naked woman.
> 6. Naked girls crying, "Stupid America!"
> 7. I was crouching in a puddle, for fear of being shot by a machine gun. My breasts were torn.
> 8. Burned down electric power lines.
> 9. A telephone pole had burned and fallen down.
> 10. A field of watermelons.
> 11. A dead horse.
> 12. What with dead cats, pigs, and people, it was just a hell on earth.

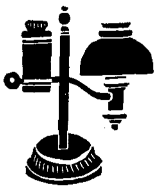
Physical collapse brought emotional and spiritual collapse with it. The survivors were, on the whole, listless and stupefied. After the escapes, and the failures to escape, from the firestorm, a silence fell over the city and its remaining population. People suffered and died without speaking or otherwise making a sound. The processions of the injured, too, were soundless. Dr. Michihiko Hachiya has written in his book "Hiroshima Diary":

> Those who were able walked silently toward the suburbs in the distant hills, their spirits broken, their initiative gone. When asked whence they had come, they pointed to the city and said, "That way," and when asked where they were going, pointed away from the city and said, "This way." They were so broken and confused that they moved and behaved like automatons.
>
> Their reactions had astonished outsiders, who reported with amazement the spectacle of long files of people holding stolidly to a narrow, rough path when close by was a smooth, easy road going in the same direction. The outsiders could not grasp the fact that they were witnessing the exodus of a people who walked in the realm of dreams.

Those who were still capable of action often acted in an absurd or an insane way. Some of them energetically pursued tasks that had made sense in the intact Hiroshima of a few minutes before but were now utterly inappropriate. Hersey relates that the German priests were bent on bringing to safety a suitcase, containing diocesan accounts and a sum of money, that they had rescued from the fire and were carrying around with them through the burning city. And Dr. Lifton describes a young soldier's punctilious efforts to find and preserve the ashes of a burned military code book while people around him were screaming for help. Other people simply lost their minds. For example, when the German priests were escaping from the firestorm, one of them, Father Wilhelm Kleinsorge, carried on his back a Mr. Fukai, who kept saying that he wanted to remain where he was. When Father Kleinsorge finally put Mr. Fukai down, he started running. Hersey writes:

> Father Kleinsorge shouted to a dozen soldiers, who were standing by the bridge, to stop him. As Father Kleinsorge started back to get Mr. Fukai, Father LaSalle called out, "Hurry! Don't waste time!" So Father Kleinsorge just requested the soldiers to take care of Mr. Fukai. They said they would, but the little, broken man got away from them, and the last the priests could see of him, he was running back toward the fire.

In the weeks after the bombing, many survivors began to notice the appearance of petechiae—small spots caused by hemorrhages—on their skin. These usually signalled the onset of the critical stage of radiation sickness. In the first stage, the victims characteristically vomited repeatedly, ran a fever, and developed an abnormal thirst. (The cry "Water! Water!" was one of the few sounds often heard in Hiroshima on the day of the bombing.) Then, after a few hours or days, there was a deceptively hopeful period of remission of symptoms, called the latency period, which lasted from about a week to about four weeks. Radiation attacks the reproductive function of cells, and those that reproduce most frequently are therefore the most vulnerable. Among these are the bone-marrow cells, which are responsible for the production of blood cells. During the latency period, the count of white blood cells, which are instrumental in fighting infections, and the count of platelets, which are instrumental in clotting, drop precipitously, so the body is poorly defended against infection and is liable to hemorrhaging. In the third, and final, stage, which may last for several weeks, the victim's hair may fall out and he may suffer from diarrhea and may bleed from the intestines, the mouth, or other parts of the body, and in the end he will either recover or die. Because the fireball of the Hiroshima bomb did not touch the ground, very little ground material was mixed with the fission products of the bomb, and therefore very little local fallout was generated. (What fallout there was descended in the black rain.) Therefore, the fatalities from radiation sickness were probably all caused by the initial nuclear radiation, and since this affected only people within a radius of a mile and a quarter of ground zero, most of the people who received lethal doses were killed more quickly by the thermal pulse and the blast wave. Thus, Hiroshima did not experience the mass radiation sickness that can be expected if a weapon is ground-burst. Since the Nagasaki bomb was also burst in the air, the effect of widespread lethal fallout on large areas, causing the death by radiation sickness of whole populations in the hours, days, and weeks after the blast, is a form of nuclear horror that the world has not experienced.



In the months and years following the bombing of Hiroshima, after radiation sickness had run its course and most of the injured had either died of their wounds or recovered from them, the inhabitants of the city began to learn that the exposure to radiation they had experienced would bring about a wide variety of illnesses, many of them lethal, throughout the lifetimes of those who had been exposed. An early sign that the harm from radiation was not restricted to radiation sickness came in the months immediately following the bombing, when people found that their reproductive organs had been temporarily harmed, with men experiencing sterility and women experiencing abnormalities in their menstrual cycles. Then, over the years, other illnesses, including cataracts of the eye and leukemia and other forms of cancer, began to appear in larger than normally expected numbers among the exposed population. In all these illnesses, correlations have been found between nearness to the explosion and incidence of the disease. Also, fetuses exposed to the bomb's radiation in utero exhibited abnormalities and developmental retardation. Those exposed within the mile-and-a-quarter radius were seven times as likely as unexposed fetuses to die in utero, and were also seven times as likely to die at birth or in infancy. Surviving children who were exposed in utero tended to be shorter and lighter than other children, and were more often mentally retarded. One of the most serious abnormalities caused by exposure to the bomb's radiation was microcephaly—abnormal smallness of the head, which is often accompanied by mental retardation. In one study, thirty-three cases of microcephaly were found among a hundred and sixty-nine children exposed in utero.

WHAT happened at Hiroshima was less than a millionth part of a holocaust at present levels of world nuclear armament. The more than millionfold difference amounts to more than a difference in magnitude; it is also a difference in kind. The authors of "Hiroshima and Nagasaki" observe that "an atomic bomb's massive destruction and indiscriminate slaughter involves the sweeping breakdown of all order and existence—in a word, the collapse of society itself," and that therefore "the essence of atomic destruction lies in the totality of its impact on man and society." This is true also of a holocaust, of course, except that the totalities in question are now not single cities but nations, ecosystems, and the earth's ecosphere. Yet with the exception of fallout, which was relatively light at Hiroshima and Nagasaki (because both the bombs were air-burst), the immediate devastation caused by today's bombs would be of a sort similar to the devastation in those cities. The immediate effects of a twenty-megaton bomb are not different in kind from those of a twelve-and-a-half-kiloton bomb; they are only more extensive. (The proportions of the effects do change greatly with yield, however. In small bombs, the effects of the initial nuclear radiation are important, because it strikes areas in which people might otherwise have remained alive, but in larger bombs—ones in the megaton range—the consequences of the initial nuclear radiation, whose range does not increase very much with yield, are negligible, because it strikes areas in which everyone will have already been burned or blasted to death.) In bursts of both weapons, for instance, there is a radius within which the thermal pulse can ignite newspapers: for the twelve-and-a-half-kiloton weapon, it is a little over two miles; for the twenty-megaton weapon, it is twenty-five miles. (Since there is no inherent limit on the size of a nuclear weapon, these figures can be increased indefinitely, subject only to the limitations

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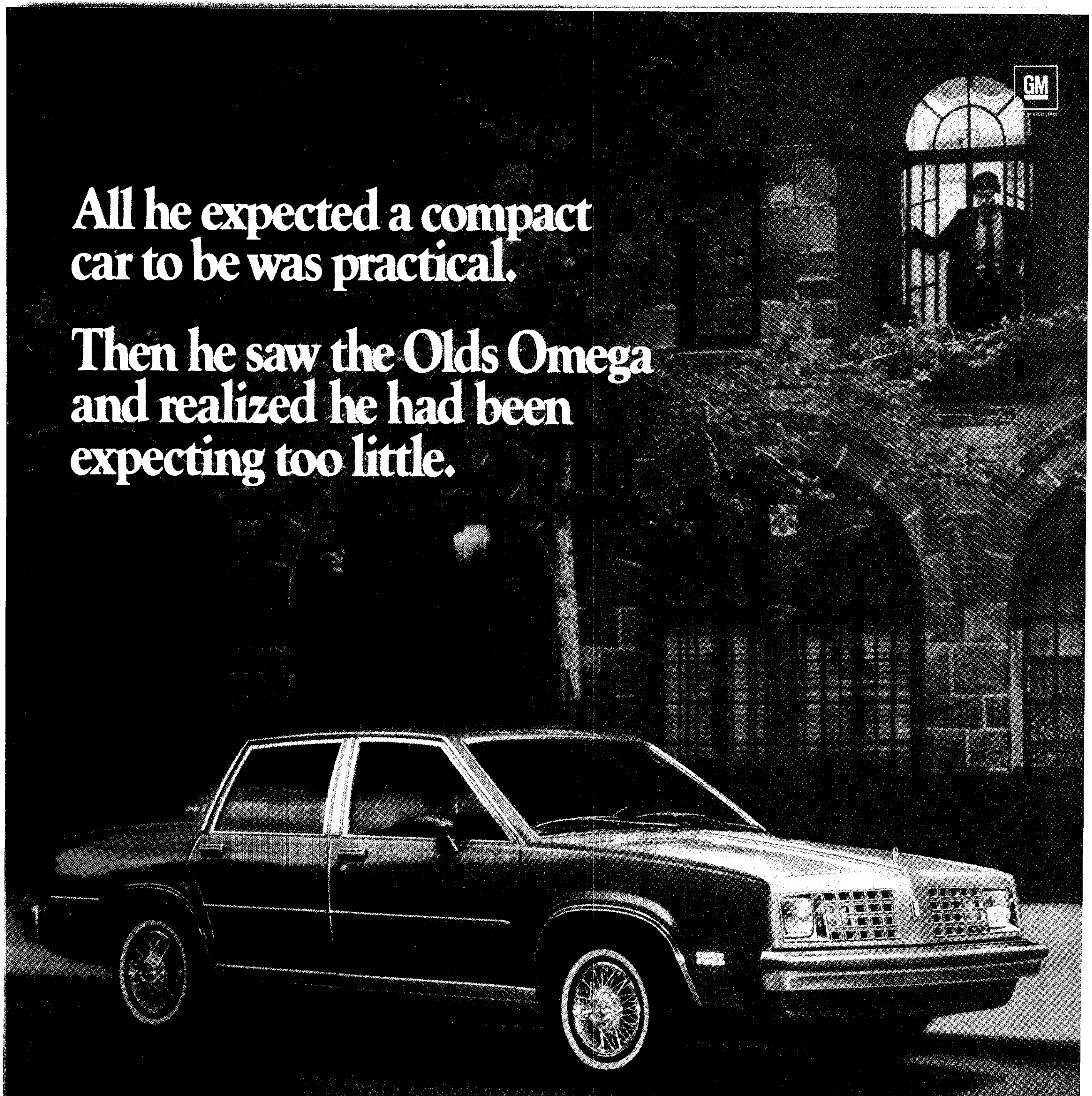

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imposed by the technical capacities of the bomb builder—and of the earth's capacity to absorb the blast. The Soviet Union, which has shown a liking for sheer size in so many of its undertakings, once detonated a sixty-megaton bomb.) Therefore, while the total effect of a holocaust is qualitatively different from the total effect of a single bomb, the experience of individual people in a holocaust would be, in the short term (and again excepting the presence of lethal fallout wherever the bombs were ground-burst), very much like the experience of individual people in Hiroshima. The Hiroshima people's experience, accordingly, is of much more than historical interest. It is a picture of what our whole world is always poised to become—a backdrop of scarcely imaginable horror lying just behind the surface of our normal life, and capable of breaking through into that normal life at any second. Whether we choose to think about it or not, it is an omnipresent, inescapable truth about our lives today that at every single moment each one of us may suddenly become the deranged mother looking for her burned child; the professor with the ball of rice in his hand whose wife has just told him "Run away, dear!" and died in the fires; Mr. Fukai running back into the firestorm; the naked man standing on the blasted plain that was his city, holding his eyeball in his hand; or, more likely, one of millions of corpses. For whatever our "modest hopes" as human beings may be, every one of them can be nullified by a nuclear holocaust.

One way to begin to grasp the destructive power of present-day nuclear weapons is to describe the consequences of the detonation of a one-megaton bomb, which possesses eighty times the explosive power of the Hiroshima bomb, on a large city, such as New York. Burst some eighty-five hundred feet above the Empire State Building, a one-megaton bomb would gut or flatten almost every building between Battery Park and 125th Street, or within a radius of four and four-tenths miles, or in an area of sixty-one square miles, and would heavily damage buildings between the northern tip of Staten Island and the George Washington Bridge, or within a radius of about eight miles, or in an area of about two hundred square miles. A conventional explosive delivers a swift shock, like a slap, to whatever it hits, but the blast wave of a sizable nuclear weapon endures for several seconds and "can surround and destroy whole buildings" (Glasstone). People, of course, would be picked up and hurled away from the blast along with the rest of the debris. Within the sixty-one square miles, the walls, roofs, and floors of any buildings that had not been flattened would be collapsed, and the people and furniture inside would be swept down onto the street. (Technically, this zone would be hit by various overpressures of at least five pounds per square inch. Overpressure is defined as the pressure in excess of normal atmospheric pressure.) As far away as ten miles from ground zero, pieces of glass and other sharp objects would be hurled about by the blast wave at lethal velocities. In Hiroshima, where buildings were low and, outside the center of the city, were often constructed of light materials, injuries from falling buildings were often minor. But in New York, where the buildings are tall and are constructed of heavy materials, the physical collapse of the city would certainly kill millions of people. The streets of New York are narrow ravines running between the high walls of the city's buildings. In a nuclear attack, the walls would fall and the ravines would fill up. The people in the buildings would fall to the street with the debris of the buildings, and the people in the street would be crushed by this avalanche of people and buildings. At a distance of two miles or so from ground zero, winds would reach four hundred miles an hour, and another two miles away they would reach a hundred and eighty miles an hour. Meanwhile, the fireball would be growing, until it was more than a mile wide, and rocketing upward, to a height of over six miles. For ten seconds, it would broil the city below. Anyone caught in the open within nine miles of ground zero would receive third-degree burns and would probably be killed; closer to the explosion, people would be charred and killed instantly. From Greenwich Village up to Central Park, the heat would be great enough to melt metal and glass. Readily inflammable materials, such as newspapers and dry leaves, would ignite in all five boroughs (though in only a small part of Staten Island) and west to the Passaic River, in New Jersey, within a radius of about nine and a half miles from ground zero, thereby creating an area of more than two hundred and eighty square miles in which mass fires were likely to break out.

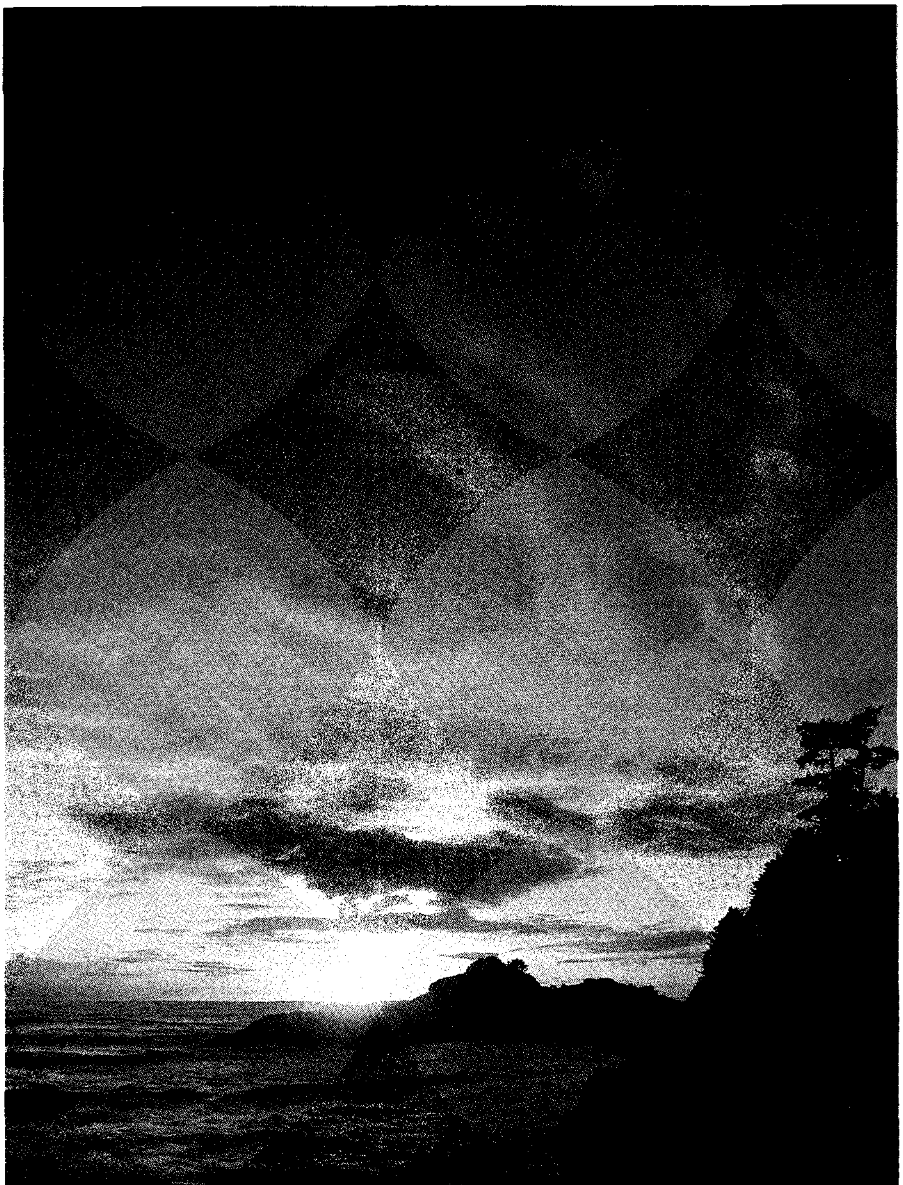
If it were possible (as it would not be) for someone to stand at Fifth Avenue and Seventy-second Street (about two miles from ground zero) without being instantly killed, he would see the following sequence of events. A dazzling white light from the fireball would illumine the scene, continuing for perhaps thirty seconds. Simultaneously, searing heat would ignite everything flammable and start to melt windows, cars, buses, lampposts, and everything else made of metal or glass. People in the street would immediately catch fire, and would shortly be reduced to heavily charred corpses. About five seconds after the light appeared, the blast wave would strike, laden with the debris of a now nonexistent midtown. Some buildings might be crushed, as though a giant fist had squeezed them on all sides, and others might be picked up off their foundations and whirled uptown with the other debris. On the far side of Central Park, the West Side skyline would fall from south to north. The four-hundred-mile-an-hour wind would blow from south to north, die down after a few seconds, and then blow in the reverse direction with diminished intensity. While these things were happening, the fireball would be burning in the sky for the ten seconds of the thermal pulse. Soon huge, thick clouds of dust and smoke would envelop the scene, and as the mushroom cloud rushed overhead (it would have a diameter of about twelve miles) the light from the sun would be blotted out, and day would turn to night. Within minutes, fires, ignited both by the thermal pulse and by broken gas mains, tanks of gas and oil, and the like, would begin to spread in the darkness, and a strong, steady wind would begin to blow in the direction of the blast. As at Hiroshima, a whirlwind might be produced, which would sweep through the ruins, and radioactive rain, generated under the meteorological conditions created by the blast, might fall. Before long, the individual fires would coalesce into a mass fire, which, depending largely on the winds, would become either a conflagration or a firestorm. In a conflagration, prevailing winds spread a wall of fire as far as there is any combustible material to sustain it; in a firestorm, a vertical updraft caused by the fire itself sucks the surrounding air in toward a central point, and the fires therefore converge in a single fire of extreme heat. A mass fire of either kind renders shelters useless by burning up all the oxygen in the air and creating toxic gases, so that anyone inside the shelters is asphyxiated, and also by heating the ground to such high temperatures that the shelters turn, in effect, into ovens, cremating the people inside them. In Dresden, several days after the firestorm raised there by Allied conventional bombing, the interiors of some bomb shelters were still so hot that when they were opened the inrushing air caused the contents to burst into flame. Only those who had fled their shelters when the bombing started had any chance of surviving. (It is difficult to predict in a particular situation which form the fires will take. In actual experience, Hiroshima suffered a firestorm and Nagasaki suffered a conflagration.)

In this vast theatre of physical effects, all the scenes of agony and death that took place at Hiroshima would again take place, but now involving millions of people rather than hundreds of thousands. Like the people of Hiroshima, the people of New York would be burned, battered, crushed, and irradiated in every conceivable way. The city and its people would be mingled in a smoldering heap. And then, as the fires started, the survivors (most of whom would be on the periphery of the explosion) would be driven to abandon to the flames those family members and other people who were unable to flee, or else to die with them. Before long, while the ruins burned, the processions of injured, mute people would begin their slow progress out of the outskirts of the devastated zone. However, this time a much smaller proportion of the population than at Hiroshima would have a chance of escaping. In general, as the size of the area of devastation increases, the possibilities for escape decrease. When the devastated area is relatively small, as it was at Hiroshima, people who are not incapacitated will have a good chance of escaping to safety before the fires coalesce into a mass fire. But when the devastated area is great, as it would be after the detonation of a megaton bomb, and fires are springing up at a distance of nine and a half miles from ground zero, and when what used to be the streets are piled high with burning rubble, and the day (if the attack occurs in the daytime) has grown impenetrably dark, there is little chance that anyone who is not on the very edge of the devastated area will be able to make his way to safety. In New York, most people would die wherever the blast found them, or not very far from there.

If instead of being burst in the air the bomb were burst on or near the ground in the vicinity of the Empire State Building, the overpressure would be very much greater near the center of the blast area but the range hit by a minimum of five pounds per square inch of overpressure would be less. The range of the thermal pulse would be about the same as that of the air burst. The fireball would be almost two miles across, and would engulf midtown Manhattan from Greenwich Village nearly to Central Park. Very little is known about what would happen to a city that was inside a fireball, but one would expect a good deal of what was there to be first pulverized and then melted or vaporized. Any human beings in the area would be reduced to smoke and ashes; they would simply disappear. A crater roughly three blocks in diameter and two hundred feet deep would open up. In addition, heavy radioactive fallout would be created as dust and debris from the city rose with the mushroom cloud and then fell back to the ground. Fallout would begin to drop almost immediately, contaminating the ground beneath the cloud with levels of radiation many times lethal doses, and quickly killing anyone who might have survived the blast wave and the thermal pulse and might now be attempting an escape; it is difficult to believe that there would be appreciable survival of the people of the city after a megaton ground burst. And for the next twenty-four hours or so more fallout would descend downwind from the blast, in a plume whose direction and length would depend on the speed and the direction of the wind that happened to be blowing at the time of the attack. If the wind was blowing at fifteen miles an hour, fallout of lethal intensity would descend in a plume about a hundred and fifty miles long and as much as fifteen miles wide. Fallout that was sublethal but could still cause serious illness would extend another hundred and fifty miles downwind. Exposure to radioactivity in human beings is measured in units called rems—an acronym for "roentgen equivalent in man." The roentgen is a standard measurement of gamma- and X-ray radiation, and the expression "equivalent in man" indicates that an adjustment has been made to take into account the differences in the degree of biological damage that is caused by radiation of different types. Many of the kinds of harm done to human beings by radiation—for example, the incidence of cancer and of genetic damage—depend on the dose accumulated over many years; but radiation sickness, capable of causing death, results from an "acute" dose, received in a period of anything from a few seconds to several days. Because almost ninety per cent of the so-called "infinite-time dose" of radiation from fallout—that is, the dose from a given quantity of fallout that one would receive if one lived for many thousands of years—is emitted in the first week, the one-week accumulated dose is often used as a convenient measure for calculating the immediate harm from fallout. Doses in the thousands of rems, which could be expected throughout the city, would attack the central nervous system and would bring about death within a few hours. Doses of around a thousand rems, which would be delivered some tens of miles downwind from the blast, would kill within two weeks everyone who was exposed to them. Doses of around five hundred rems, which would be delivered as far as a hundred and fifty miles downwind (given a wind speed of fifteen miles per hour), would kill half of all exposed able-bodied young adults. At this level of exposure, radiation sickness proceeds in the three stages observed at Hiroshima. The plume of lethal fallout could descend, depending on the direction of the wind, on other parts of New York State and parts of New Jersey, Pennsylvania, Delaware, Maryland, Connecticut, Massachusetts, Rhode Island, Vermont, and New Hampshire, killing additional millions of people.

The circumstances in heavily contaminated areas, in which millions of people were all declining together, over a period of weeks, toward painful deaths, are ones that, like so many of the consequences of nuclear explosions, have never been experienced.

A description of the effects of a one-megaton bomb on New York City gives some notion of the meaning in human terms of a megaton of nuclear explosive power, but a weapon that is more likely to be used against New York is the twenty-megaton bomb, which has one thousand six hundred times the yield of the Hiroshima bomb. The Soviet Union is estimated to have at least a hundred and thirteen twenty-megaton bombs in its nuclear arsenal, carried by Bear intercontinental bombers. In addition, some of the Soviet SS-18 missiles are capable of carrying bombs of this size, although the actual yields are not known. Since the explosive power of the twenty-megaton bombs greatly exceeds the amount necessary to destroy most military targets, it is reasonable to suppose that they are meant for use against large cities. If a twenty-megaton bomb were air-burst over the Empire State Building at an altitude of thirty thousand feet, the zone gutted or flattened by the blast wave would have a radius of twelve miles and an area of more than four hundred and fifty square miles, reaching from the middle of Staten Island to the northern edge of the Bronx, the eastern edge of Queens, and well into New Jersey, and the zone of heavy damage from the blast wave (the zone hit by a minimum of two pounds of overpressure per square inch) would have a radius of twenty-one and a half miles, or an area of one thousand four hundred and fifty square miles, reaching to the southernmost tip of Staten Island, north as far as southern Rockland County, east into Nassau County, and west to Morris County, New Jersey. The fireball would be about four and a half miles in diameter and would radiate the thermal pulse for some twenty seconds. People caught in the open twenty-three miles away from ground zero, in Long Island, New Jersey, and southern New York State, would be burned to death. People hundreds of miles away who looked at the burst would be temporarily blinded and would risk permanent eye injury. (After the test of a fifteen-megaton bomb on Bikini Atoll, in the South Pacific, in March of 1954, small animals were found to have suffered retinal burns at a distance of three



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hundred and forty-five miles.) The mushroom cloud would be seventy miles in diameter. New York City and its suburbs would be transformed into a lifeless, flat, scorched desert in a few seconds.

If a twenty-megaton bomb were ground-burst on the Empire State Building, the range of severe blast damage would, as with the one-megaton ground blast, be reduced, but the fireball, which would be almost six miles in diameter, would cover Manhattan from Wall Street to northern Central Park and also parts of New Jersey, Brooklyn, and Queens, and everyone within it would be instantly killed, with most of them physically disappearing. Fallout would again be generated, this time covering thousands of square miles with lethal intensities of radiation. A fair portion of New York City and its incinerated population, now radioactive dust, would have risen into the mushroom cloud and would now be descending on the surrounding territory. On one of the few occasions when local fallout was generated by a test explosion in the multi-megaton range, the fifteen-megaton bomb tested on Bikini Atoll, which was exploded seven feet above the surface of a coral reef, "caused substantial contamination over an area of more than seven thousand square miles," according to Glasstone. If, as seems likely, a twenty-megaton bomb ground-burst on New York would produce at least a comparable amount of fallout, and if the wind carried the fallout onto populated areas, then this one bomb would probably doom upward of twenty million people, or almost ten per cent of the population of the United States.

THE "strategic" forces of the Soviet Union—those that can deliver nuclear warheads to the United States—are so far capable of carrying seven thousand warheads with an estimated maximum yield of more than seventeen thousand megatons of explosive power, and, barring unexpected developments in arms-control talks, the number of warheads is expected to rise in the coming years. The actual megatonnage of the Soviet strategic forces is not known, and, for a number of reasons, including the fact that smaller warheads can be delivered more accurately, it is very likely that the actual megatonnage is lower than the maximum possible; however, it is reasonable to suppose that the actual megatonnage is as much as two-thirds

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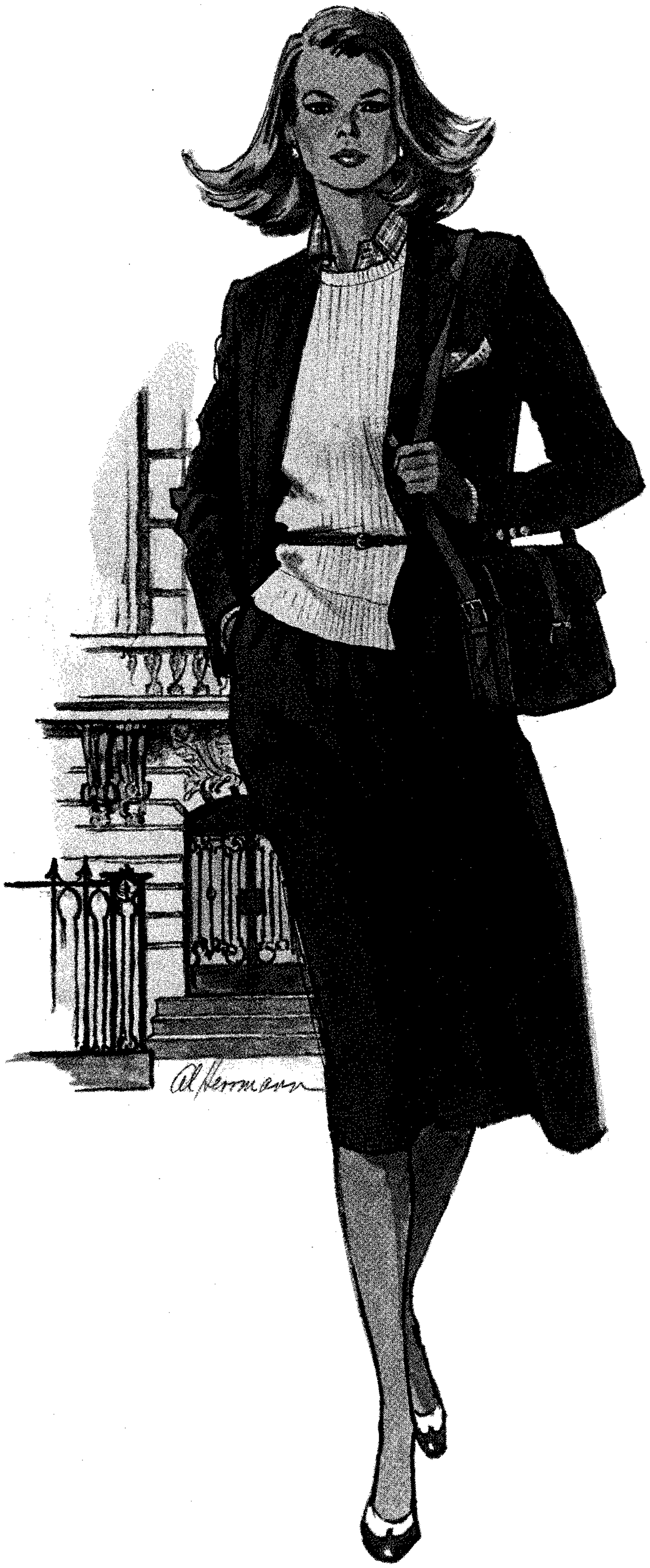

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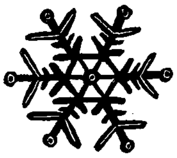
of the maximum, which would be about eleven and a half thousand megatons. If we assume that in a first strike the Soviets held back about a thousand megatons (itself an immense force), then the attack would amount to about ten thousand megatons, or the equivalent of eight hundred thousand Hiroshima bombs. American strategic forces comprise about nine thousand warheads with a yield of some three thousand five hundred megatons. The total yield of these American forces was made comparatively low for strategic reasons. American planners discovered that smaller warheads can be delivered more accurately than larger ones, and are therefore more useful for attacking strategic forces on the other side. And, in fact, American missiles are substantially more accurate than Soviet ones. However, in the last year or so, in spite of this advantage in numbers of warheads and in accuracy, American leaders have come to believe that the American forces are inadequate, and, again barring unexpected developments in arms-control talks, both the yield of the American arsenal and the number of warheads in it are likely to rise dramatically. (Neither the United States nor the Soviet Union reveals the total explosive yield of its own forces. The public is left to turn to private organizations, which, by making use of hundreds of pieces of information that *have* been released by the two governments, piece together an over-all picture. The figures I have used to estimate the maximum capacities of the two sides are taken for the most part from tables provided in the latest edition of "The Military Balance," a standard yearly reference work on the strength of military forces around the world, which is published by a research institute in London called the International Institute for Strategic Studies.) The territory of the United States, including Alaska and Hawaii, is three million six hundred and fifteen thousand one hundred and twenty-two square miles. It contains approximately two hundred and twenty-five million people, of whom sixty per cent, or about a hundred and thirty-five million, live in various urban centers with a total area of only eighteen thousand square miles. I asked Dr. Kendall, who has done considerable research on the consequences of nuclear attacks, to sketch out in rough terms what the actual distribution of bombs might be in a ten-thousand-megaton Soviet attack in the early nineteen-eighties on all targets in the United States, military and civilian.

"Without serious distortion," he said, "we can begin by imagining that we would be dealing with ten thousand weapons of one megaton each, although in fact the yields would, of course, vary considerably. Let us also make the assumption, based on common knowledge of weapons design, that on average the yield would be one-half fission and one-half fusion. This proportion is important, because it is the fission products—a virtual museum of about three hundred radioactive isotopes, decaying at different rates—that give off radioactivity in fallout. Fusion can add to the total in ground bursts by radioactivation of ground material by neutrons, but the quantity added is comparatively small. Targets can be divided into two categories—hard and soft. Hard targets, of which there are about a thousand in the United States, are mostly missile silos. The majority of them can be destroyed only by huge, blunt overpressures, ranging anywhere from many hundreds to a few thousand pounds per square inch, and we can expect that two weapons might be devoted to each one to assure destruction. That would use up two thousand megatons. Because other strategic military targets—such as Strategic Air Command bases—are near centers of population, an attack on them as well, perhaps using another couple of hundred megatons, could cause a total of more than twenty million casualties, according to studies by the Arms Control and Disarmament Agency. If the nearly eight thousand weapons remaining were then devoted to the cities and towns of the United States in order of population, every community down to the level of fifteen hundred inhabitants would be hit with a megaton bomb—which is, of course, many, many times what would be necessary to annihilate a town that size. For obvious reasons, industry is highly correlated with population density, so an attack on the one necessarily hits the other, especially when an attack of this magnitude is considered. Ten thousand targets would include everything worth hitting in the country and much more; it would simply *be* the United States. The targeters would run out of targets and victims long before they ran out of bombs. If you imagine that the bombs were distributed according to population, then, allowing for the fact that the attack on the military installations would have already killed about twenty million people, you would have about forty megatons to devote to each remaining million people in the country. For the seven and a half million people in New York City, that would come to three hundred megatons. Bearing in mind what one megaton can do, you can see that this would be preposterous overkill. In practice, one might expect the New York metropolitan area to be hit with some dozens of one-megaton weapons."

In the first moments of a ten-thousand-megaton attack on the United States, I learned from Dr. Kendall and from other sources, flashes of white light would suddenly illumine large areas of the country as thousands of suns, each one brighter than the sun itself, blossomed over cities, suburbs, and towns. In those same moments, when the first wave of missiles arrived, the vast majority of the people in the regions first targeted would be irradiated, crushed, or burned to death. The thermal pulses could subject more than six hundred thousand square miles, or one-sixth of the total land mass of the nation, to a minimum level of forty calories per centimetre squared—a level of heat that chars human beings. (At Hiroshima, charred remains in the rough shape of human beings were a common sight.) Tens of millions of people would go up in smoke. As the attack proceeded, as much as three-quarters of the country could be subjected to incendiary levels of heat, and so, wherever there was inflammable material, could be set ablaze. In the ten seconds or so after each bomb hit, as blast waves swept outward from thousands of ground zeros, the physical plant of the United States would be swept away like leaves in a gust of wind. The six hundred thousand square miles already scorched by the forty or more calories of heat per centimetre squared would now be hit by blast waves of a minimum of five pounds per square inch, and virtually all the habitations, places of work, and other man-made things there—substantially the whole human construct in the United States—would be vaporized, blasted, or otherwise pulverized out of existence. Then, as clouds of dust rose from the earth, and mushroom clouds spread overhead, often linking to form vast canopies, day would turn to night. (These clouds could blanket as much as a third of the nation.) Shortly, fires would spring up in the debris of the cities and in every forest dry enough to burn. These fires would simply burn down the United States. When one pictures a full-scale attack on the United States, or on any other country, therefore, the picture of a single city being flattened by a single bomb—an image firmly engraved in the public imagination, probably because of the bombings of Hiroshima and Nagasaki—must give way to a picture of substantial sections of the country being turned by a sort of nuclear carpet-bombing into immense infernal regions, literally tens of thousands of square miles in area, from which escape is impossible. In Hiroshima and Nagasaki, those who had not been killed or injured so severely that they could not move were able to flee to the undevastated world around them, where they found help, but in any city where three or four bombs had been used—not to mention fifty, or a hundred—flight from one blast would only be flight toward another, and no one could escape alive. Within these regions, each of three of the immediate effects of nuclear weapons—initial radiation, thermal pulse, and blast wave—would alone be enough to kill most people: the initial nuclear radiation would subject tens of thousands of square miles to lethal doses; the blast waves, coming from all sides, would nowhere fall below the overpressure necessary to destroy almost all buildings; and the thermal pulses, also coming from all sides, would always be great enough to kill exposed people and, in addition, to set on fire everything that would burn. The ease with which virtually the whole population of the country could be trapped in these zones of universal death is suggested by the fact that the sixty per cent of the population that lives in an area of eighteen thousand square miles could be annihilated with only three hundred one-megaton bombs—the number necessary to cover the area with a minimum of five pounds per square inch of overpressure and forty calories per centimetre squared of heat. That would leave nine thousand seven hundred megatons, or ninety-seven per cent of the megatonnage in the attacking force, available for other targets. (It is hard to imagine what a targeter would do with all his bombs in these circumstances. Above several thousand megatons, it would almost become a matter of trying to hunt down individual people with nuclear warheads.)

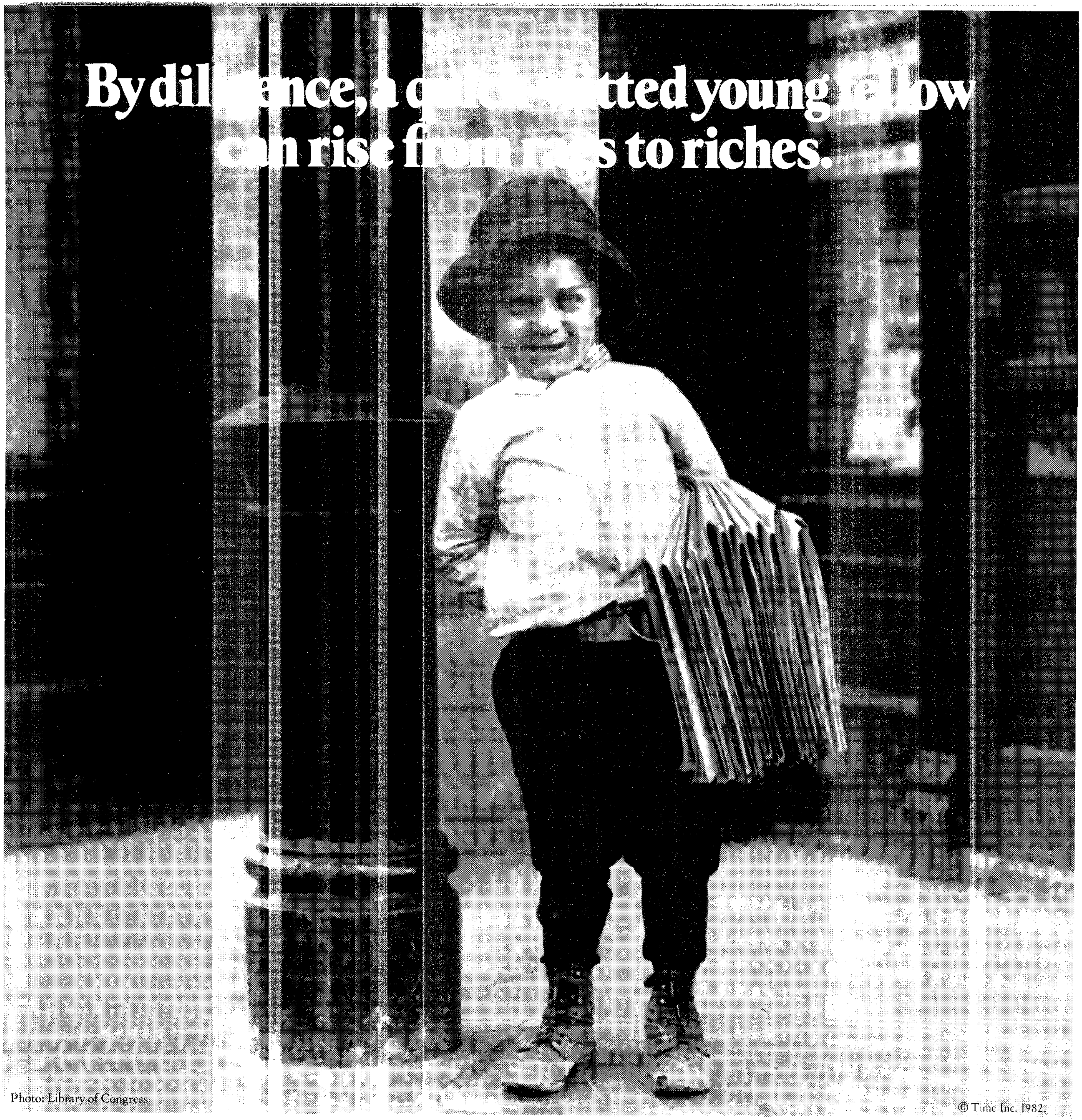


The statistics on the initial nuclear radiation, the thermal pulses, and the blast waves in a nuclear holocaust can be presented in any number of ways, but all of them would be only variations on a simple theme—the annihilation of the United States and its people. Yet while the immediate nuclear effects are great enough in a ten-thousand-megaton attack to destroy the country many times over, they are not the most powerfully lethal of the local effects of nuclear weapons. The killing power of the local fallout is far greater. Therefore, if the Soviet Union was bent on producing the maximum overkill—if, that is, its surviving leaders, whether out of calculation, rage, or madness, decided to eliminate the United States not merely as a political and social entity but as a biological one—they would burst their bombs on the ground rather than in the air. Although the scope of severe blast damage would then be reduced, the blast waves, fireballs, and thermal pulses would still be far more than enough to destroy the country, and, in addition, provided only that the bombs were dispersed widely enough, lethal fallout would spread throughout the nation. The amount of radiation delivered by the fallout from a ground burst of a given size is still uncertain—not least because, as Glasstone notes, there has never been a "true land surface burst" of a bomb with a yield of over one kiloton. (The Bikini burst was in part over the ocean.) Many factors make for uncertainty. To mention just a few: the relative amounts of the fallout that rises into the stratosphere and the fallout that descends to the ground near the blast are dependent on, among other things, the yield of the weapon, and, in any case, can be only guessed at; the composition of the fallout will vary with the composition of the material on the ground that is sucked up into the mushroom cloud; prediction of the distribution of fallout by winds of various speeds at various altitudes depends on a choice of several "models;" and the calculation of the arrival time of the fallout—an important calculation, since fallout cannot harm living things until it lands near them—is subject to similar speculative doubts. However, calculations on the basis of figures for a one-megaton ground burst which are given in the Office of Technology Assessment's report show that ten thousand megatons would yield one-week doses around the country averaging more than ten thousand rems. In actuality, of course, the bombs would almost certainly not be evenly spaced around the country but, rather, would be concentrated in populated areas and in missile fields; and the likelihood is that in most places where people lived or worked the doses would be many times the average, commonly reaching several tens of thousands of rems for the first week, while in remote areas they would be less, or, conceivably, even nonexistent. (The United States contains large tracts of empty desert, and to target them would be virtually meaningless from any point of view.)

These figures provide a context for judging the question of civil defense. With overwhelming immediate local effects striking the vast majority of the population, and with one-week doses of radiation then rising into the tens of thousands of rems, evacuation and shelters are a vain hope. Needless to say, in these circumstances evacuation before an attack would be an exercise in transporting people from one death to another. In some depictions of a holocaust, various rescue operations are described, with unafflicted survivors bringing food, clothes, and medical care to the afflicted, and the afflicted making their way to thriving, untouched communities, where churches, school auditoriums, and the like would have been set up for their care—as often happens after a bad snowstorm, say. Obviously, none of this could come about. In the first place, in a full-scale attack there would in all likelihood *be* no surviving communities, and, in the second place, everyone who failed to seal himself off from the outside environment for as long as several months would soon die of radiation sickness. Hence, in the months after a holocaust there would be no activity of any sort, as, in a reversal of the normal state of things, the dead would lie on the surface and the living, if there were any, would be buried underground.

To this description of radiation levels around the country, an addition remains to be made. This is the fact that attacks on the seventy-six nuclear power plants in the United States would produce fallout whose radiation had much greater longevity than that of the weapons alone. The physicist Dr. Kosta Tsipis, of M.I.T., and one of his students, Steven Fetter, recently published an article in *Scientific*

By diligence, a quick-witted young fellow can rise from rags to riches.



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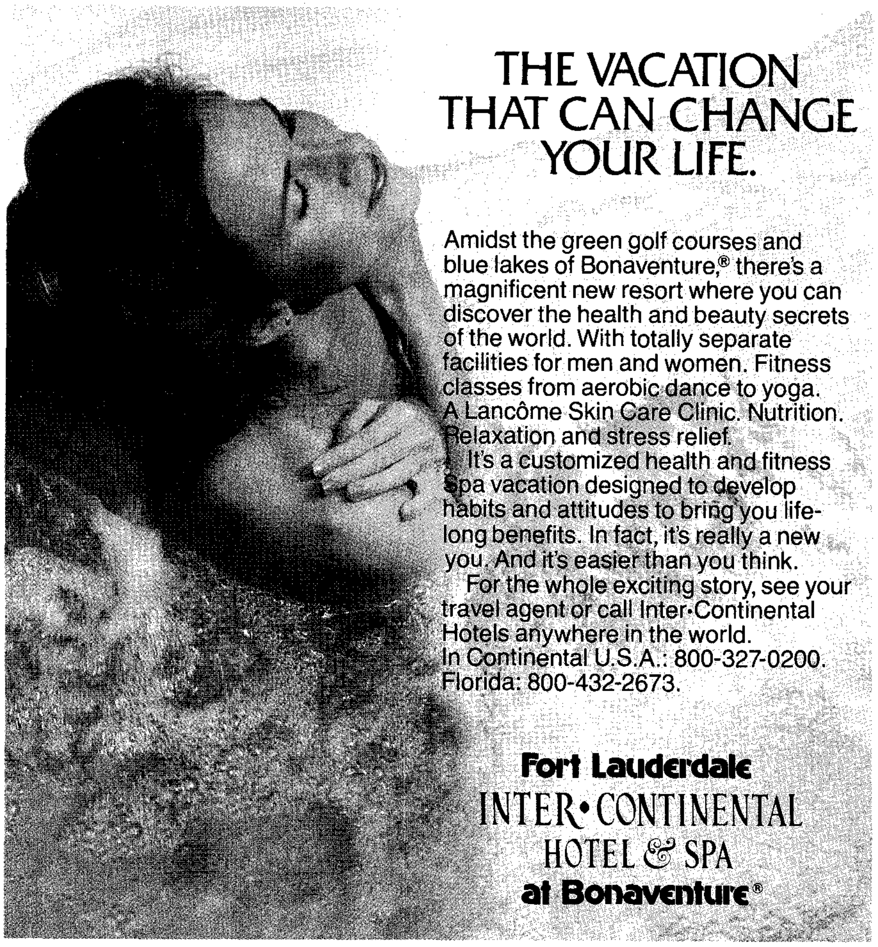

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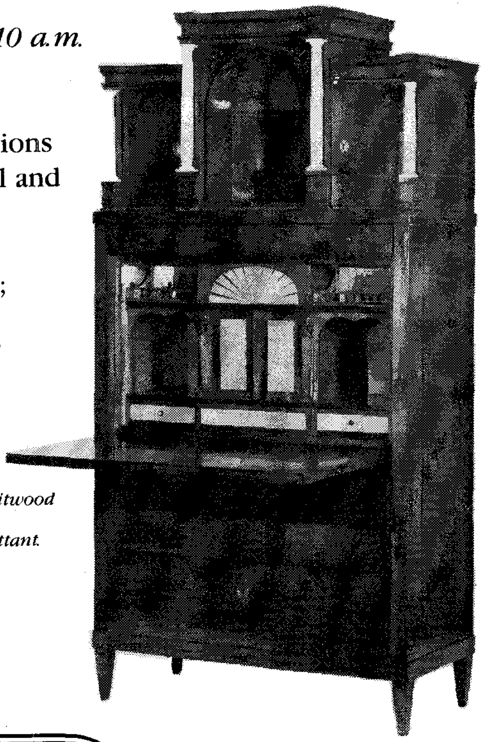

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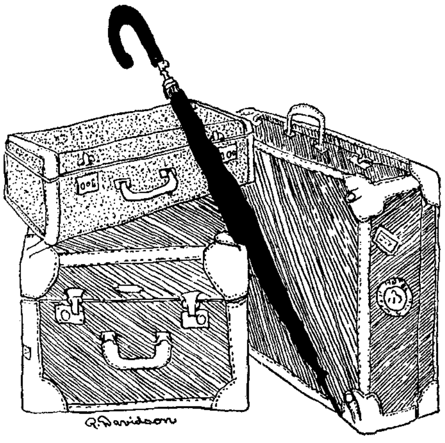
American called "Catastrophic Releases of Radioactivity," in which they calculate the damage from a one-megaton thermonuclear ground burst on a one-gigawatt nuclear power plant. In such a ground burst, the facility's radioactive contents would be vaporized along with everything nearby, and the remains would be carried up into the mushroom cloud, from which they would descend to the earth with the rest of the fallout. But whereas the fission products of the weapon were newly made, and contained many isotopes that would decay to insignificant levels very swiftly, the fission products in a reactor would be a collection of longer-lived isotopes (and this applies even more strongly to the spent fuel in the reactor's holding pond), since the short-lived ones would, for the most part, have had enough time to reduce themselves to harmless levels. The intense but comparatively short-lived radiation from the weapon would kill people in the first few weeks and months, but the long-lived radiation that was produced both by the weapon and by the power plant could prevent anyone from living on a vast area of land for decades after it fell. For example, after a year an area of some seventeen hundred square miles downwind of a power plant on which a one-megaton bomb had been ground-burst (again assuming a fifteen-mile-an-hour wind) would still be delivering more than fifty rems per year to anyone who tried to live there, and that is two hundred and fifty times the "safe" dose established by the E.P.A. The bomb by itself would produce this effect over an area of only twenty-six square miles. (In addition to offering an enemy a way of redoubling the effectiveness of his attacks in a full-scale holocaust, reactors provide targets of unparalleled danger in possible terrorist nuclear attacks. In an earlier paper, Tsipis and Fetter observe that "the destruction of a reactor with a nuclear weapon, even of relatively small yield, such as a crude terrorist nuclear device, would represent a national catastrophe of lasting consequences." It can be put down as one further alarming oddity of life in a nuclear world that in building nuclear power plants nations have opened themselves to catastrophic devastation and long-term contamination of their territories by enemies who manage to get hold of only a few nuclear weapons.)

If, in a nuclear holocaust, anyone hid himself deep enough under the earth and stayed there long enough to survive, he would emerge into a dying natural environment. The vulnerability of the environment is the last word in the argument against the usefulness of shelters: there is no hole big enough to hide all of nature in. Radioactivity penetrates the environment in many ways. The two most important components of radiation from fallout are gamma rays, which are electromagnetic radiation of the highest intensity, and beta particles, which are electrons fired at high speed from decaying nuclei. Gamma rays subject organisms to penetrating whole-body doses, and are responsible for most of the ill effects of radiation from fallout. Beta particles, which are less penetrating than gamma rays, act at short range, doing harm when they collect on the skin, or on the surface of a leaf. They are harmful to plants on whose foliage the fallout descends—producing "beta burn"—and to grazing animals, which can suffer burns as well as gastrointestinal damage from eating the foliage. Two of the most harmful radioactive isotopes present in fallout are strontium-90 (with a half-life of twenty-eight years) and cesium-137 (with a half-life of thirty years). They are taken up into the food chain through the roots of plants or through direct ingestion by animals, and contaminate the environment from within. Strontium-90 happens to resemble calcium in its chemical composition, and therefore finds its way into the human diet through dairy products and is eventually deposited by the body in the bones, where it is thought to cause bone cancer. (Every person in the world now has in his bones a measurable deposit of strontium-90 traceable to the fallout from atmospheric nuclear testing.)

Over the years, agencies and departments of the government have sponsored numerous research projects in which a large variety of plants and animals were irradiated in order to ascertain the lethal or sterilizing dose for each. These findings permit the prediction of many gross ecological consequences of a nuclear attack. According to "Survival of Food Crops and Livestock in the Event of Nuclear War," the proceedings of the 1970 symposium at Brookhaven National Laboratory, the lethal doses for most mammals lie between a few hundred rads and a thousand rads of gamma radiation; a rad—for "roentgen absorbed dose"—is a roentgen of radiation that has been absorbed by an organism, and is roughly equal to a rem. For example, the lethal doses of gamma radiation for animals in pasture, where fallout would be descending on them directly and they would be eating fallout that had fallen on the grass, and would thus suffer from doses of beta radiation as well, would be one hundred and eighty rads for cattle; two hundred and forty rads for sheep; five hundred and fifty rads for swine; three hundred and fifty rads for horses; and eight hundred rads for poultry. In a ten-thousand-megaton attack, which would create levels of radiation around the country averaging more than ten thousand rads, most of the mammals of the United States would be killed off. The lethal doses for birds are in roughly the same range as those for mammals, and birds, too, would be killed off. Fish are killed at doses of between one thousand one hundred rads and about five thousand six hundred rads, but their fate is less predictable. On the one hand, water is a shield from radiation, and would afford some protection; on the other hand, fallout might concentrate in bodies of water as it ran off from the land. (Because radiation causes no pain, animals, wandering at will through the environment, would not avoid it.) The one class of animals containing a number of species quite likely to survive, at least in the short run, is the insect class, for which in most known cases the lethal doses lie between about two thousand rads and about a hundred thousand rads. Insects, therefore, would be destroyed selectively. Unfortunately for the rest of the environment, many of the phytophagous species—insects that feed directly on vegetation—which "include some of the most ravaging species on earth" (according to Dr. Vernon M. Stern, an entomologist at the University of California at Riverside, writing in "Survival of Food Crops"), have very high tolerances, and so could be expected to survive disproportionately, and then to multiply greatly in the aftermath of an attack. The demise of their natural predators the birds would enhance their success.



Plants in general have a higher tolerance to radioactivity than animals do. Nevertheless, according to Dr. George M. Woodwell, who supervised the irradiation with gamma rays, over several years, of a small forest at Brookhaven Laboratory, a gamma-ray dose of ten thousand rads "would devastate most vegetation" in the United States, and, as in the case of the pastured animals, when one figures in the beta radiation that would also be delivered by fallout the estimates for the lethal doses of gamma rays must be reduced—in this case, cut in half. As a general rule, Dr. Woodwell and his colleagues at Brookhaven discovered, large plants are more vulnerable to radiation than small ones. Trees are among the first to die, grasses among the last. The most sensitive trees are pines and the other conifers, for which lethal doses are in roughly the same range as those for mammals. Any survivors coming out of their shelters a few months after the attack would find that all the pine trees that were still standing were already dead. The lethal doses for most deciduous trees range from about two thousand rads of gamma-ray radiation to about ten thousand rads, with the lethal doses for eighty per cent of deciduous species falling between two thousand and eight thousand rads. Since the addition of the beta-ray burden could lower these lethal doses for gamma rays by as much as fifty per cent, the actual lethal doses in gamma rays for these trees during an attack could be from one thousand to four thousand rads, and in a full-scale attack they would die. Then, after the trees had died, forest fires would break out around the United States. (Because as much as three-quarters of the country could be subjected to incendiary levels of the thermal pulses, the sheer scorching of the land could have killed off a substantial part of the plant life in the country in the first few seconds after the detonations, before radioactive poisoning set in.) Lethal doses for grasses on which tests have been done range between six thousand and thirty-three thousand rads, and a good deal of grass would therefore survive, except where the attacks had been heaviest. Most crops, on the other

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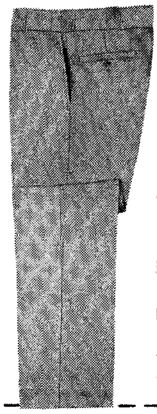

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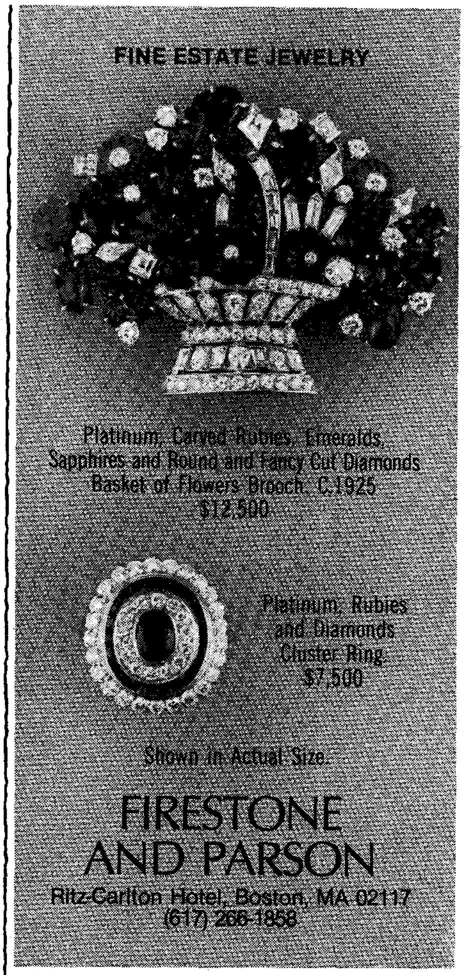
hand, are killed by doses below five thousand rads, and would be eliminated. (The lethal dose for spring barley seedlings, for example, is one thousand nine hundred and ninety rads, and that for spring wheat seedlings is three thousand and ninety rads.)

When vegetation is killed off, the land on which it grew is degraded. And as the land eroded after an attack life in lakes, rivers, and estuaries, already hard hit by radiation directly, would be further damaged by minerals flowing into the watercourses, causing eutrophication—a process in which an oversupply of nutrients in the water encourages the growth of algae and microscopic organisms, which, in turn, deplete the oxygen content of the water. When the soil loses its nutrients, it loses its ability to "sustain a mature community" (in Dr. Woodwell's words), and "gross simplification" of the environment occurs, in which "hardy species," such as moss and grass, replace vulnerable ones, such as trees; and "succession"—the process by which ecosystems recover lost diversity—is then "delayed or even arrested." In sum, a full-scale nuclear attack on the United States would devastate the natural environment on a scale unknown since early geological times, when, in response to natural catastrophes whose nature has not been determined, sudden mass extinctions of species and whole ecosystems occurred all over the earth. How far this "gross simplification" of the environment would go once virtually all animal life and the greater part of plant life had been destroyed and what patterns the surviving remnants of life would arrange themselves into over the long run are imponderables; but it appears that at the outset the United States would be a republic of insects and grass.

IT has sometimes been claimed that the United States could survive a nuclear attack by the Soviet Union, but the bare figures on the extent of the blast waves, the thermal pulses, and the accumulated local fallout dash this hope irrevocably. They spell the doom of the United States. And if one imagines the reverse attack on the Soviet Union, its doom is spelled out in similar figures. (The greater land mass of the Soviet Union and the lower megatonnage of the American forces might reduce the factor of overkill somewhat.) Likewise, any country subjected to an attack of more than a few hundred megatons would be



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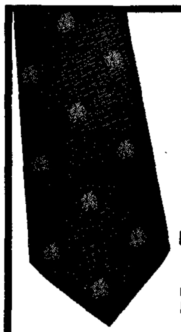

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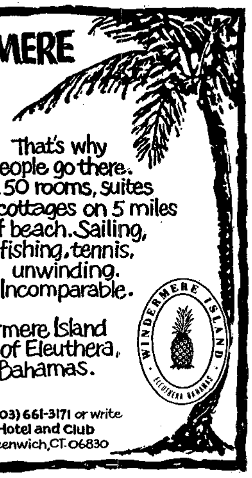

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doomed. Japan, China, and the countries of Europe, where population densities are high, are especially vulnerable to damage, even at "low" levels of attack. There is no country in Europe in which survival of the population would be appreciable after the detonation of several hundred megatons; most European countries would be annihilated by tens of megatons. And these conclusions emerge even before one takes into account the global ecological consequences of a holocaust, which would be superimposed on the local consequences. As human life and the structure of human existence are seen in the light of each person's daily life and experience, they look impressively extensive and solid, but when human things are seen in the light of the universal power unleashed onto the earth by nuclear weapons they prove to be limited and fragile, as though they were nothing more than a mold or a lichen that appears in certain crevices of the landscape and can be burned off with relative ease by nuclear fire.

Many discussions of nuclear attacks on the United States devote considerable attention to their effect on the nation's economy, but if the population has been largely killed off and the natural environment is in a state of collapse "the economy" becomes a meaningless concept; for example, it makes no difference what percentage of "the automobile industry" has survived if all the producers and drivers of automobiles have died. Estimates of economic survival after a full-scale holocaust are, in fact, doubly unreal, because, as a number of government reports have shown, the nation's economy is so much more vulnerable to attack than the population that even at most levels of "limited" attack a greater proportion of the economy than of the population would be destroyed. An intact economic plant that goes to waste because there aren't enough people left to run it is one absurdity that a nuclear holocaust does not present us with. At relatively low levels of attack, however, the more or less complete destruction of the economy, accompanied by the survival of as much as twenty or thirty per cent of the population, is conceivable. Since the notion of "limited nuclear war" has recently become attractive to the American leadership, it may not be digressive to discuss what the consequences of smaller attacks would be. Our knowledge of nuclear effects is too imprecise to permit us to know at exactly what level of attack a given percentage of the population would survive, but the fact that sixty per cent of the population lives in eighteen thousand square miles and could be eliminated by the thermal pulses, blast waves, and mass fires produced by about three hundred one-megaton bombs suggests some rough magnitudes. The fallout that would be produced by the bombs if they were ground-burst would very likely kill ten or fifteen per cent of the remaining population (it could lethally contaminate some three hundred thousand square miles), and if several hundred additional megatons were used the percentage of the entire population killed in the short term might rise to something like eighty-five. Or, to put it differently, if the level of attack on civilian targets did not rise above the low hundreds of megatons tens of millions of people might survive in the short term. But that same level of attack would destroy so much of the physical plant of the economy, and, of course, so many of the laborers and managers who make it work, that in effect the economy would be nearly one hundred per cent destroyed. (There is a tendency when one is analyzing nuclear attacks to begin to accustom oneself to such expressions as "a thousand megatons," and therefore to begin to regard lower amounts as inconsequential. Yet even one megaton, which contains the explosive yield of eighty Hiroshimas, would, if it should be dropped in the United States in the form of a number of small bombs, be an unimaginable catastrophe. Ten megatons—eight hundred Hiroshimas—would leave any nation on earth devastated beyond anything in our historical experience. A hundred megatons—eight thousand Hiroshimas—is already outside comprehension.)

As soon as one assumes that many tens of millions of people might survive the early stages of an attack, what are often called the long-term effects of a holocaust come into view; in fact, it is only when the imagined attack is reduced to this level that it begins to make sense to talk about many of the long-term effects, because only then will there be people left living to suffer them. The most obvious of these is injury. In an attack that killed from fifty to seventy per cent of the population outright, the great majority of the survivors would be injured. In a lim-

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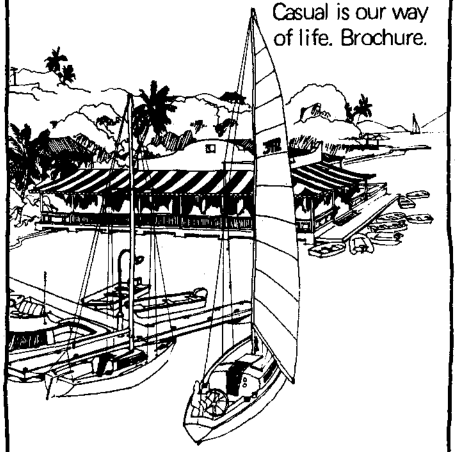

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ited attack, some people might try to make their way to shelters to escape the fallout, which would be less intense than in the larger attack but still lethal in most populated areas. (If we again assume ground bursts, and also assume that two thousand megatons have been used on military targets, then average levels of radiation around the country would be in the low thousands of rems. But in this case averages would have little or no meaning; actual levels would be very high in some places and very low or nonexistent in others, depending on targeting and weather patterns.) People who reached shelters and sealed themselves in in time might have a chance of survival in some areas, but a large number of people would have received lethal doses of radiation without knowing it (since exposure to radiation is painless) and would enter the shelters and die there, making life in the shelters unbearable for the others. With many people seeking to get into the shelters, attempts to decide who was to be allowed to enter and who was to be kept out would begin in bitterness and end in chaos. (In the nineteen-fifties, when Americans gave greater thought to the matter of shelters than they do now, some communities began to prepare to defend their shelters against intruders by arming themselves.) Also, the withdrawal into shelters of the uninjured or lightly injured portion of the population would be more consequential for the survivors as a body, because in a limited attack there might be a considerable number of people on the surface who would have had a chance of surviving if they had not been abandoned. The widespread use of shelters would therefore mean additional deaths; the injured or sick people would die unattended on the surface while the uninjured and healthy people hid underground.

The injuries from the attack would very likely be compounded by epidemics. Dr. H. Jack Geiger, who teaches community medicine at the School of Biomedical Education of the City College of New York, recently described to me the likely medical conditions after a limited attack. "The landscape would be strewn with millions of corpses of human beings and animals," he pointed out. "This alone is a situation without precedent in history. There would be an immense source of pollution of water and food. If you read the literature concerning natural disasters such as floods and

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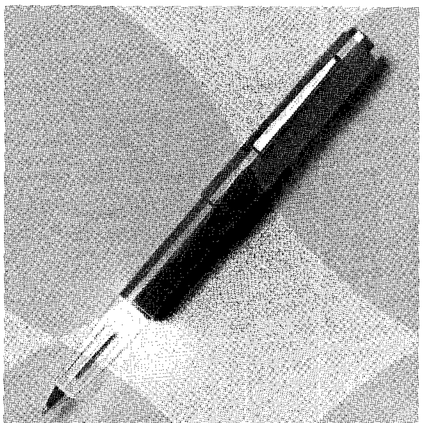

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typhoons, you find that there is always an associated danger of cholera or typhoid. The corpses would also feed a fast-growing population of insects, and insects happen to be a prime vector of disease. Naturally, medical measures to fight disease would not be taken, since the blasts would have destroyed virtually all medical facilities. Nor, of course, would there be such elementary sanitary facilities as running water and garbage collection. Finally, the population's resistance to infection would have been weakened, since many would be suffering from sublethal radiation sickness and wounds. It would be impossible to devise circumstances more favorable to the spread of epidemics."

Strategists of nuclear conflict often speak of a period of "recovery" after a limited attack, but a likelier prospect is a long-term radical deterioration in the conditions of life. For a while, some supplies of food and clothing would be found in the rubble, but then these would give out. For a people, the economy—any kind of economy, whether primitive or modern—is the means of survival from day to day. So if you ruin the economy—if you suspend its functioning, even for a few months—you take away the means of survival. Eventually, if enough people do live, the economy will revive in one form or another, but in the meantime people will die: they will starve, because the supply of food has been cut off; they will freeze, because they have no fuel or shelter; they will perish of illness, because they have no medical care. If the economy in question is a modern technological one, the consequences will be particularly severe, for then the obstacles to restoring it will be greatest. Because a modern economy, like an ecosystem, is a single, interdependent whole, in which each part requires many other parts to keep functioning, its wholesale breakdown will leave people unable to perform the simplest, most essential tasks. Even agriculture—the immediate means of subsistence—is caught up in the operations of the interdependent machine, and breaks down when it breaks down. Modern agriculture depends on fertilizers to make crops grow, on machines to cultivate the crops, on transportation to carry the produce thousands of miles to the consumers, on fuel to run the means of transportation and the agricultural machinery, and on pesticides and drugs to increase production. If fertilizers, machines, transportation, fuel, pesticides, and drugs are taken

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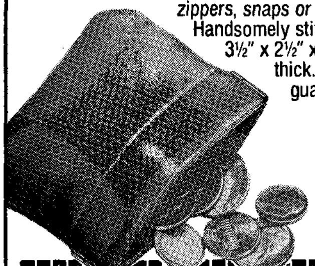
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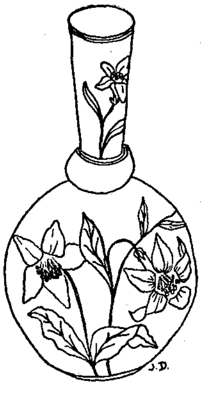
away, agriculture will come to a halt, and people will starve. Also, because of the interdependence of the system, no sector of the economy can be repaired unless many of the other sectors are in good order.

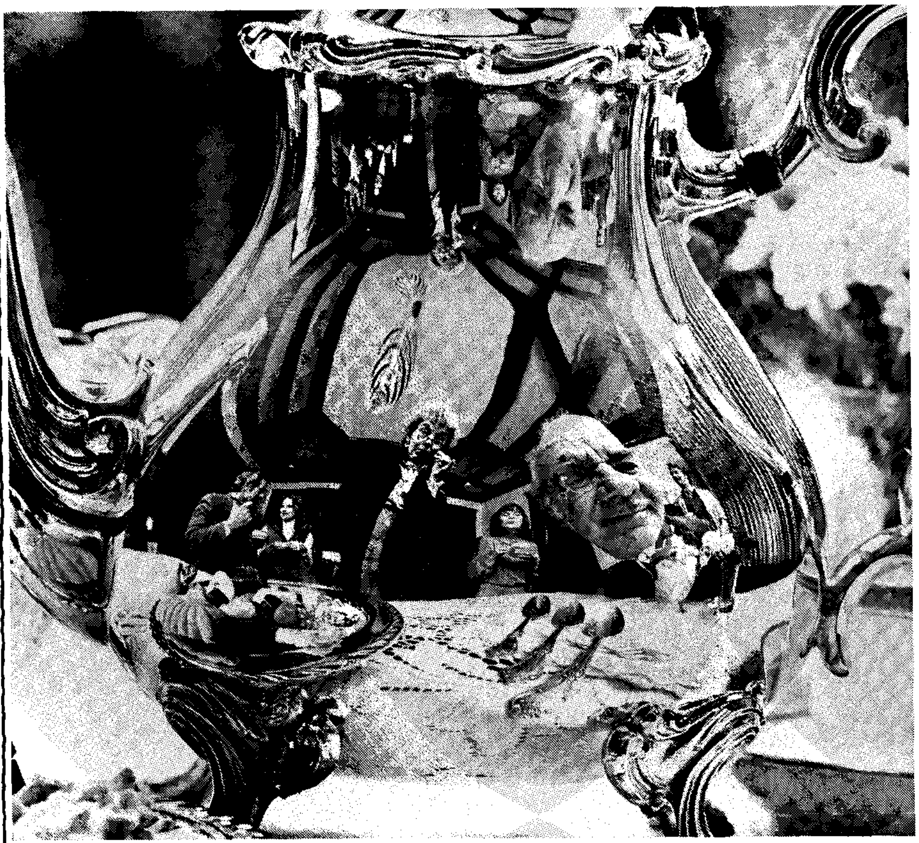
But in a nuclear attack, of course, all sectors of the economy would be devastated at once. The task facing the survivors, therefore, would be not to restore the old economy but to invent a new one, on a far more primitive level. But the invention of a primitive economy would not be a simple matter. Even economies we think of as primitive depend on considerable knowledge accumulated through long experience, and in modern times this knowledge has been largely lost. The economy of the Middle Ages, for example, was far less productive than our own, but it was exceedingly complex, and it would not be within the capacity of people in our time suddenly to establish a medieval economic system in the ruins of their twentieth-century one. After a limited nuclear attack, the typical predicament of a survivor would be that of, say, a bus driver in a city who was used to shopping at a supermarket and found himself facing the question of how to grow his own food, or of a bookkeeper in a suburb who found that he must make his own clothing, not to mention the cloth for the clothing. Innumerable things that we now take for granted would abruptly be lacking. In addition to food and clothing, they would include: heating, electric lights, running water, telephones, mail, transportation of all kinds, all household appliances powered by electricity or gas, information other than by word of mouth, medical facilities, sanitary facilities, and basic social services, such as fire departments and police. To restore these essentials of life takes time; but there would be no time. Hunger, illness, and possibly cold would press in on the dazed, bewildered, disorganized, injured remnant of the population on the very day of the attack. They would have to start foraging immediately for their next meal. Sitting among the debris of the Space Age, they would find that the pieces of a shattered modern economy around them—here an automobile, there a washing machine—were mismatched to their elemental needs. Nor would life be made easier for them by the fact that their first need, once they left any shelters they might have found, would be to flee the heavily irradiated, burned-out territories where they used to live, and to start over in less irradiated, unburned territories, which would probably be in the wilderness. Facing these urgent requirements, they would not be worrying about rebuilding the automobile industry or the electronics industry; they would be worrying about how to find nonradioactive berries in the woods, or how to tell which trees had edible bark.

Lastly, over the decades not only would the survivors of a limited attack face a contaminated and degraded environment but they themselves—their flesh, bones, and genetic endowment—would be contaminated: the generations that would be trying to rebuild a human life would be sick and possibly deformed generations. The actual doses received by particular survivors would, of course, depend on their circumstances, but some notion of the extent of the contamination can perhaps be gathered from the fact that if people came out of shelters after three months into an area in which the fallout would in the long run deliver a dose of ten thousand rems they would still receive about three per cent of the total, or three hundred rems, over their lifetimes, with two hundred of those rems being received in the first year. I spoke to Dr. Edward Radford, who is a professor of environmental epidemiology at the University of Pittsburgh, and who was chairman from 1977 to 1980 of the National Academy of Sciences' Committee on the Biological Effects of Ionizing Radiations, about the medical consequences of such exposure. "The present incidence of cancer, exclusive of skin cancer, in the United States population is thirty per cent, and roughly seventeen per cent die of the disease," he told me. "Since the dose of radiation that doubles the cancer rate is about one hundred and fifty rems, we could expect that a dose of three hundred rems would cause just about everybody to get cancer of one kind or another, and perhaps half of them would die from it. In addition, the dose that is estimated to cause a doubling of the spontaneous-mutation rate—which now affects ten per cent of all births—is also one hundred and fifty rems, and therefore we could also ex-



pect genetic abnormalities to increase dramatically." Whether a human community could survive bearing this burden of illness and mutation is at best questionable.

IN considering the global consequences of a holocaust, the first question to be asked is how widespread the hostilities would be. It is often assumed that a holocaust, even if it were full-scale, would be restricted to the Northern Hemisphere, destroying the United States, the Soviet Union, Europe, China, and Japan, but in fact there is no assurance that hostilities would not spread to other parts of the world. Both Soviet and American leaders believe that the rivalry between their countries has worldwide ideological significance, and in the name of their causes they might well extend their attacks almost anywhere. Futhermore, it takes very little imagination to see that once the superpowers had absorbed several thousand megatons of nuclear explosives each they would no longer *be* superpowers; indeed, they would no longer exist as nations at all. At that point, any sizable nation that had been spared attack—for example, Vietnam, Mexico, Nigeria, Australia, or South Africa—might, in the minds of the leaders of the ex-superpowers, become tempting as a target. It might suddenly occur to them that on a devastated earth mere survival would be the stuff of global might, and either or both of the ex-superpowers might then set about destroying those surviving middle-ranking powers that seemed closest to sharing the ideology of the enemy. Again, it is impossible to know what thoughts would go through the minds of men in caves, or perhaps in airborne command posts, who had just carried out the slaughter of hundreds of millions of people and whose nations had been annihilated in a similar slaughter (and it should always be borne in mind that sheer insanity is one of the possibilities), but it could be that in some confused attempt to shape the political future of the post-holocaust world (if there is one) they would carry their struggle into the would-be-neutral world. It could be that even now the United States has a few dozen megatons reserved in one contingency plan or another for, say, Cuba, Vietnam, and North Korea, while the Soviet Union may have a similar fate in mind for, among others, Israel, South Africa, and Australia. We also have to ask ourselves what the Chinese, the



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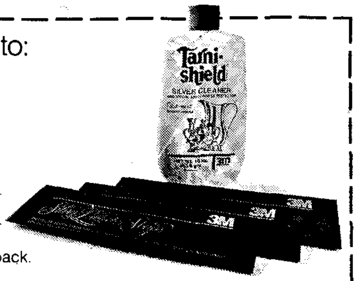

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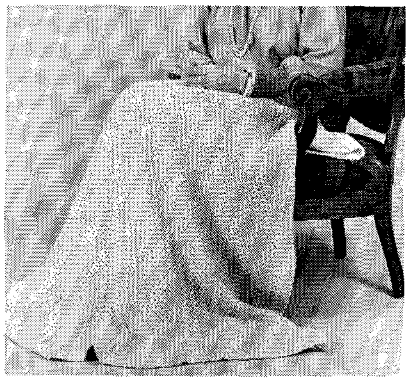

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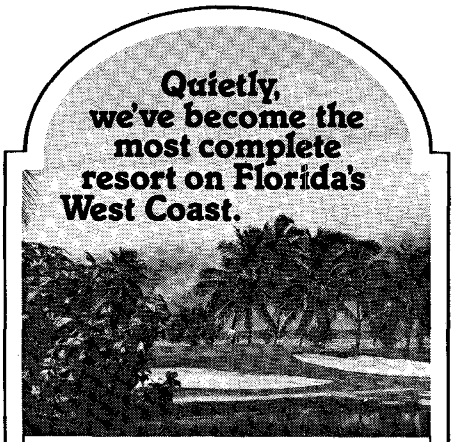
French, and the British, who all possess nuclear arms, and the Israelis, the South Africans, and the Indians, who are all suspected of possessing them, would attempt once the mayhem began. And this list of nuclear-armed and possibly nuclear-armed countries shows every sign of being a growing one.

Although it may seem inappropriate to mention "civilization" in the same breath as the death of hundreds of millions of people, it should at least be pointed out that a full-scale holocaust would, if it extended throughout the Northern Hemisphere, eliminate the civilizations of Europe, China, Japan, Russia, and the United States from the earth.

As I have already mentioned, there are uncertainties inherent in any attempt to predict the consequences of a nuclear holocaust; but when we try to estimate those consequences for the targeted countries it turns out that the readily calculable local primary effects of the bombs are so overwhelming that we never arrive at the uncertainties. Obviously, there can be no tangled interplay of destructive influences in society if there is no society; and the local primary effects are more than enough to remove society from the picture. This is why those observers who speak of "recovery" after a holocaust or of "winning" a nuclear "war" are dreaming. They are living in a past that has been swept away forever by nuclear arms. However, when it comes to inquiring into the global ecological consequences of a holocaust and, with them, the risk of human extinction, the uncertainties, and the political questions they raise, move to the fore. To begin with, this inquiry requires us to concentrate our attention on the earth. The earth is a compound mystery, for it presents us with the mystery of life in its entirety, the mystery of every individual form of life, and the mystery of ourselves, and all our thoughts and works. (Since we are earth-made, investigation of the earth eventually becomes introspection.) The reason for our ignorance is not that our knowledge of the earth is slight—on the contrary, it is extensive, and has grown in this century more than in all other centuries put together—but that the amount to be known is demonstrably so much greater. There is a sense, of course, in which knowledge can increase ignorance. By leading to fresh discoveries, knowledge may open up new wonders



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to our view but not yet to our understanding. Our century's discoveries in the earth sciences have increased our ignorance in just this sense: they have given us a glimpse of how much there is still to find out. Dr. Lewis Thomas, the noted biologist and essayist, has defined this ignorance in categorical terms, saying, "We are ignorant about how we work, about where we fit in, and most of all about the enormous, imponderable system of life in which we are embedded as working parts. We do not really understand nature, at all." Of all the things to be said in a discussion of the global effects of a nuclear holocaust, this is by far the most important: that because of the extent of what we know that we don't know, we are simply debarred from making confident judgments.

Since an awareness of the boundaries of present knowledge is a necessary part of science's effort to achieve precision and clarity, it is not surprising that the literature on global nuclear effects is littered with reminders of the fallibility and, above all, of the incompleteness of our present understanding. This appropriately modest, tentative spirit has perhaps been best summed up in the opening comments of the Office of Technology Assessment report, which states that the most important thing to know about a holocaust is not anything that "is known" but "what is not known." A similar acknowledgment of the importance of the unknown is implicit in a remark in a 1977 "interim" report by the National Academy of Sciences on the peril to the stratosphere from man-made disturbances in general. "It is unfortunately true," the report says, "that, accompanying very substantial over-all progress, the recent development of our understanding of stratospheric chemistry has been dominated by major upheavals caused by the recognition of the importance of processes whose role either had not been properly appreciated . . . or whose rate coefficient had been grossly misjudged. . . . To say how many more major upheavals we should expect in the future is rather like trying to foresee the unforeseeable." The report goes on to note that as knowledge of the chemistry of the stratosphere has improved, it has turned out that "even with the largest computers it is not possible to represent the detailed three-dimensional motions in the atmosphere while including the detailed chemical reactions." Before the "upheavals," scientists seemed to "know" a good deal; afterward, they knew that they knew less.

Our ignorance pertains to the possibility of altogether unknown major effects of nuclear explosions as well as to the magnitude of the known ones and their infinite interactions. Like so much else in science, the discovery of what is known so far about the effects of nuclear explosions is a story of surprises, starting with the surprise that the nucleus could be fissioned at all. Perhaps the second big surprise was the extent of harmful fallout; this came to light in the fifteen-megaton test at Bikini in 1954, when, to the amazement of the designers of the test, fallout began to descend on Marshall Islanders and on American servicemen manning weather stations on atolls at supposedly safe distances from the explosion. It was not until this test that the world was alerted to the real magnitude—or, at any rate, to the magnitude as it is understood so far—of the peril from nuclear fallout. The next surprise was the extent of the effects of the electromagnetic pulse. Probably the most recent surprise has been the discovery, in the nineteen-seventies, of the peril to the ozone layer. Around 1970, a number of scientists became worried that the use of supersonic transports, which fly in the stratosphere and emit oxides of nitrogen, would deplete the ozone layer, and it occurred to two Columbia physicists—Henry M. Foley and Malvin A. Ruderman—that since nuclear weapons were known to produce nitric oxide in the stratosphere, the capacity of this compound for depleting the ozone might be tested by trying to find out whether ozone levels had dropped as a result of the atmospheric testing of nuclear weapons. The investigation was inconclusive, but it led the two men to worry about the fate of the ozone in the event of a nuclear holocaust. Their concern awakened the concern of other scientists, and in 1975 the National Academy of Sciences produced its report "Long-Term Worldwide Effects of Multiple Nuclear-Weapons Detonations," which attempted, among other things, to measure this peril. The sequence of events leading to our present awareness of this peril is illuminating, because it shows how a broad new development in scientific thought—in this case, the growing

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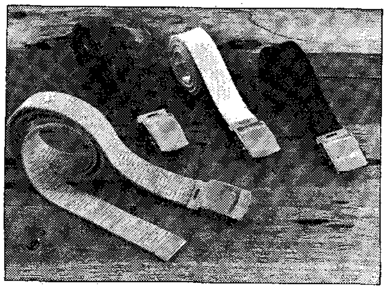

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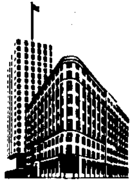

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awareness in the nineteen-seventies of the vulnerability of the ecosphere to human intervention—brought to light an immense effect of nuclear weapons which had previously gone unnoticed. It is always difficult to become aware of one's ignorance, but as we try to give due weight to our present ignorance it can help us to recall that little more than a decade ago possibly the gravest global consequence of a holocaust which we now know of was totally unsuspected. Given the incomplete state of our knowledge of the earth, it seems unjustified at this point to assume that further developments in science will not bring forth further surprises.

The embryonic state of the earth sciences is one reason for our uncertainty concerning the outcome of a nuclear holocaust, but there is a moral and political reason that may be even more fundamental. Epistemologically, the earth is a special object. Scientific inquiry into the effects of a holocaust, like every other form of inquiry into this subject, is restricted by our lack of experience with large-scale nuclear destruction. But the lack of experience is not the result of neglect or accident, or even of our reluctance to face the horror of our predicament. In scientific work, experience means experiments, and scientific knowledge is not considered to be knowledge until it has been confirmed by experiment—or, at least, by observation. Until then, no matter how plausible a theory sounds, and no matter how dazzling it may appear intellectually, it is relegated to the limbo of hypothesis. But when it comes to judging the consequences of a nuclear holocaust there can be no experimentation, and thus no empirical verification. We cannot run experiments with the earth, because we have only one earth, on which we depend for our survival; we are not in possession of any spare earths that we might blow up in some universal laboratory in order to discover their tolerance of nuclear holocausts. Hence, our knowledge of the resiliency of the earth in the face of nuclear attack is limited by our fear of bringing about just the event—human extinction—whose likelihood we are chiefly interested in finding out about. The famous uncertainty principle, formulated by the German physicist Werner Heisenberg, has shown that our knowledge of atomic phenomena is limited because the experimental procedures with which we must carry out our observations inevitably interfere with the phe-

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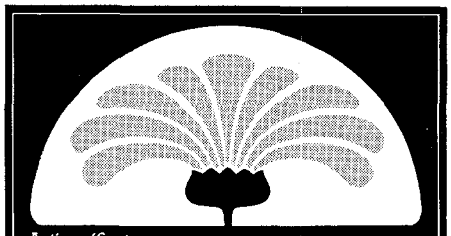

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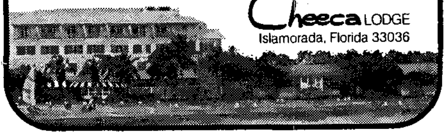

nomena that we wish to measure. The question of extinction by nuclear arms—or by any other means, for that matter—presents us with an opposite but related uncertainty principle: our knowledge of extinction is limited because the experiments with which we would carry out our observations interfere with us, the observers, and, in fact, might put an end to us. This uncertainty principle complements the first. Both principles recognize that a limit to our knowledge is fixed by the fact that we are incarnate beings, not disembodied spirits, and that observation, like other human activities, is a physical process and so can interfere both with what is under observation and with the observer. Therefore, it is ultimately extinction itself that fixes the boundary to what we can know about extinction. No human being will ever be able to say with confidence, "*Now* I see how many megatons it takes for us to exterminate ourselves." To the extent that this check stands in the way of investigation, our uncertainty is forced on us not so much by the limitations of our intellectual ability as by the irreducible fact that we have no platform for observation except our mortal frames. In these circumstances, which are rudiments of the human condition, toleration of uncertainty is the path of life, and the demand for certainty is the path toward death.

We have had some experience of moral and political restraints on research in the field of medicine, in which, in all civilized countries, there are restrictions on experimenting with human beings; when the results might be injurious, laboratory animals are used instead. However, in investigating the properties of the earth we lack even any recourse that would be analogous to the use of these animals, for if we have no extra, dispensable earths to experiment with, neither are we in possession of any planets bearing life of some different sort. (As far as we now know, among the planets in the solar system the earth stands alone as a bearer of life.) And while it is true that we can run experiments in various corners of the earth and try to extrapolate the results to the earth as a whole, what is always missing from the results is the totality of the ecosphere, with its endless pathways of cause and effect, linking the biochemistry of the humblest alga and global chemical and dynamic balances into an indivisible whole. This whole is a mechanism in itself; indeed, it may be regarded as a

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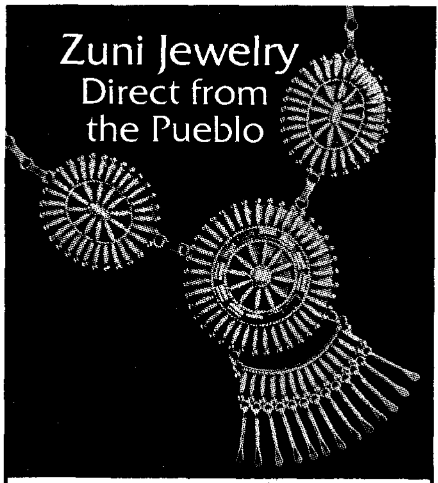

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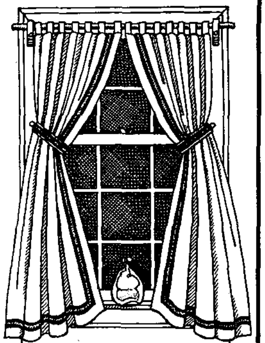

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single living being. Dr. Thomas, for one, has likened the earth to a cell. The analogy is compelling, but in one noteworthy respect, at least, there is a difference between the earth and a cell: whereas each cell is one among billions struck from the same genetic mold, the earth, as the mother of all life, has no living parent. If the behavior of cells is often predictable, it is because they exist en masse, and what a billion of them, programmed by their genetic material, have done a billion times the billion and first is likely to do again. But the earth is a member of no class as yet open to our observation which would permit the drawing of such inferences by generalization. When it comes to trying to predict its tolerance to perturbances, we are in the position of someone asked to deduce the whole of medicine by observing one human being. With respect to its individuality, then, the earth is not so much like a cell as like an individual person. Like a person, the earth is unique; like a person, it is sacred; and, like a person, it is unpredictable by the generalizing laws of science.

If we had no knowledge at all of the likely consequences of a holocaust for the earth, there would, of course, be no basis whatever for judgment. However, given the extent of what there is to know about the earth, it is no contradiction to say that while our ignorance is vast and, in a certain sense, irremediable (although, at the same time, the amount that we can and certainly will find out is also probably measureless), our knowledge is also vast, and that what we know is extremely alarming. Since in a global holocaust even the so-called local effects of the explosions may cover the whole land mass of the Northern Hemisphere, they may have secondary consequences that are truly global. The destruction of estuarine life throughout the Northern Hemisphere and the radioactive poisoning of the local waters could cause general harm to life in the oceans. Ecological collapse on the land in large parts of the Northern Hemisphere could have large consequences for the climate of the earth as a whole. Loss of vegetation, for example, increases the surface reflectivity of the earth, and this has a cooling effect on the atmosphere. In heavily irradiated zones, the mutation of plant pathogens might create virulent strains that could, in the words of the 1975 N.A.S. report, "produce disease epidemics that would spread globally." The irradiated northern half of the earth would in general become a huge radioecological laboratory, in which many species would be driven to extinction, others would flourish and possibly invade unharmed parts of the earth, and still others would evolve into new and unpredictable forms.

But more important by far, in all probability, than the global aftereffects of the local destruction would be the direct global effects, the most important of which is ozone loss. The concentration of ozone in the earth's atmosphere is very small—not more than ten parts by weight per million parts of air. Yet the ozone layer has a critical importance to life on earth, because it protects the earth's surface from the harmful ultraviolet radiation in sunlight, which would otherwise be "lethal to unprotected organisms as we now know them," to quote Dr. Martyn M. Caldwell, a leading authority on the biological effects of ultraviolet radiation, in a recent article of his in *BioScience* titled "Plant Life and Ultraviolet Radiation: Some Perspective in the History of the Earth's UV Climate." I have already mentioned Glasstone's remark that without the absorption of solar ultraviolet radiation by the ozone "life as currently known could not exist except possibly in the ocean." The 1975 N.A.S. report states, "As biologists, geologists, and other students of evolution recognize, the development of an oxygen-rich atmosphere, with its *ozone layer, was a precondition to the development of multicelled plants and animals, and all life forms on land have evolved under this shield*" (italics in the original). B. W. Boville, of the Canadian Atmospheric Environment Service, has written that the ozone layer is "a crucial element to climate and to the existence of all life on earth." Dr. Fred Iklé, who served as the director of the Arms Control and Disarmament Agency under Presidents Nixon and Ford, and now serves as Under Secretary of Defense for Policy under President Reagan, has stated that severe reduction of the ozone layer through nuclear explosions could "shatter the ecological structure that permits man to remain alive on this planet." And a paper delivered at a United Nations-sponsored scientific conference in March, 1977, states, "The whole biological world, so dependent on micro-organisms, may, if doses [of ultraviolet radiation] increase, be in serious trouble."

As the passage from the N.A.S. report states, the beginnings of multicelled life are associated with the formation of an ozone layer. In the earliest stages of evolution, when there was little or no oxygen in the atmosphere, and no ozone layer—ozone (O_3) is formed when sunlight strikes oxygen (O_2) in the upper atmosphere—ultraviolet radiation, which would then have reached the surface of the earth relatively unimpeded, may have been one of the most important sources of the energy that built up the first biological macromolecules, about three and a half billion years ago. But about two billion years ago, when those molecules had formed into single-celled organisms, the organisms freed themselves from dependence on ultraviolet light as a source of energy by coming to rely instead on photosynthesis—a method of extracting energy from sunlight by making use of carbon dioxide and water, which were available everywhere in the environment, as they are today. Photosynthesis was "probably the largest single step on the evolutionary path leading to the growth of higher life forms" (according to Dr. Michael McElroy, a physicist at Harvard's Center for Earth and Planetary Physics, who has done important new work in the study of the earth's atmosphere), and set the stage for terrestrial life as it exists today. For that life to develop, however, the genetic material, DNA, had also to develop, and ultraviolet light, as it happens, is particularly destructive of DNA, causing it to lose "biological activity," as Dr. Caldwell notes. Furthermore, ultraviolet light inhibits photosynthesis, and thus on the earth of two billion years ago it placed another barrier in the way of what turned out to be the next step in evolution. And there was still another barrier to evolution in the fact that oxygen, a by-product of photosynthesis, was poisonous to existing organisms. At first, it is suggested, organisms solved their oxygen problem by fixing oxygen to ferrous iron—a procedure that would explain the existence of banded iron formations found in sedimentary rock that is some two billion years old. But it was life's second solution to its oxygen problem—the development of enzymes capable of returning oxygen harmlessly to the environment—that proved to be the more successful one. It lifted the barriers to evolution just mentioned: by detoxifying oxygen it liberated life from its dependence on iron, leaving life "free to proliferate in the ocean, with rapid growth in oxygen" (McElroy);

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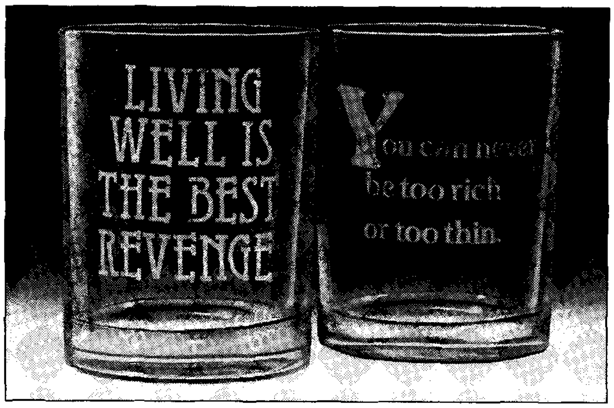
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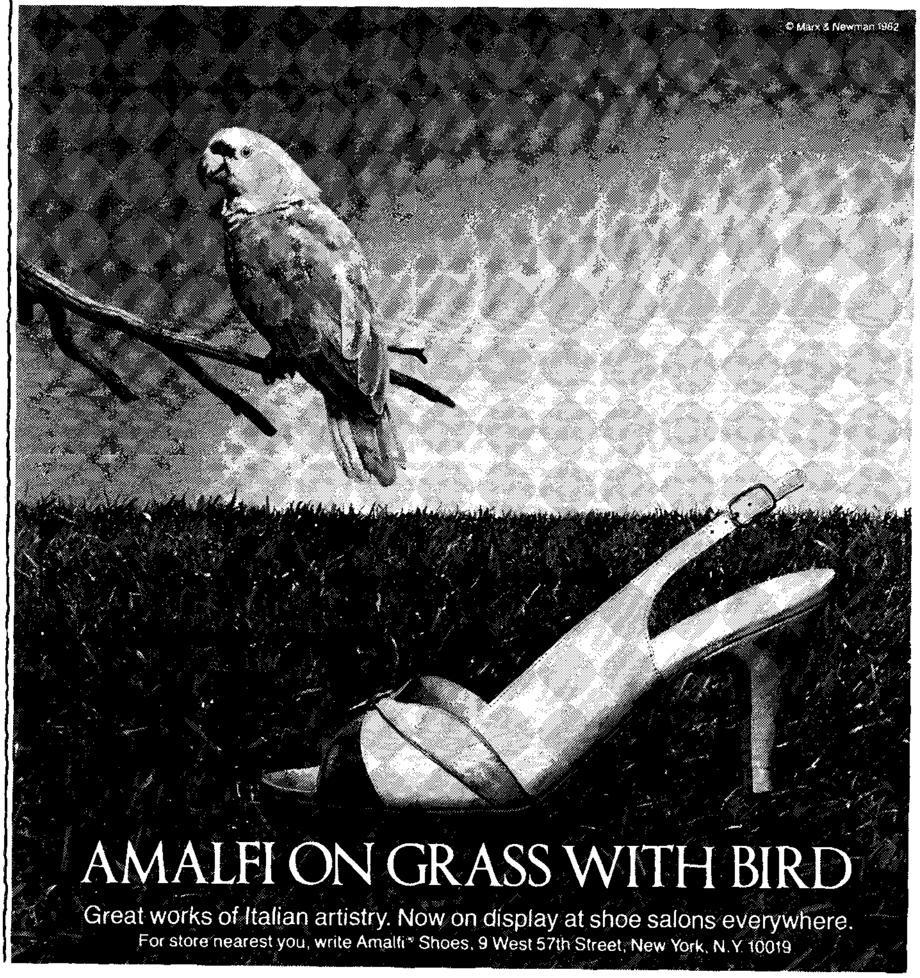
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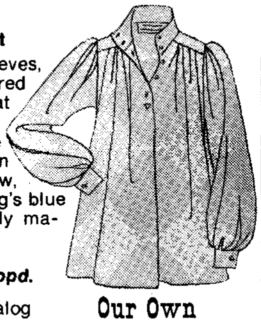

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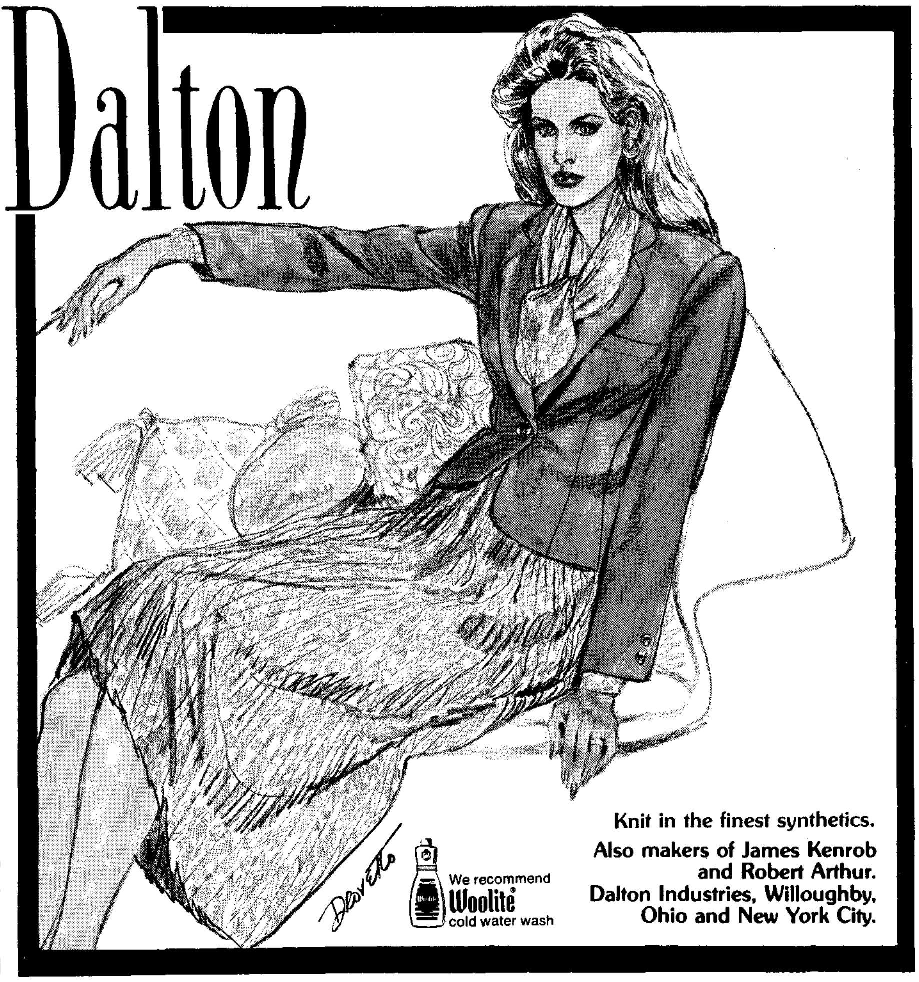
and by enriching the atmosphere with oxygen it assured the gradual creation of an ozone layer, which blocked out much of the ultraviolet radiation. Once this was done, the way was cleared, in the opinion of some scientists, for the "eruptive proliferation of species" (Caldwell) that geologists find in the fossil record of the Cambrian period, nearly six hundred million years ago. A hundred and eighty million years later, in the Silurian, life made a second leap ahead when, after more than three billion years in the ocean, it made its "dramatic appearance" (Caldwell) on land, and this leap, too, can be associated with the growth of the ozone shield, which, it is thought, around that time reached a density that would permit organisms to survive on land, without the partial protection from ultraviolet radiation which water affords.

If the formation of the ozone layer was one of the necessary preconditions for the "dramatic appearance" of life on land, then the question naturally arises whether heavy depletion of the ozone, by nuclear explosions or any other cause, might not bring about a dramatic disappearance of life, including human life, from the land. (Spray cans, incongruously, are one possible cause of harm to the ozone, because they put chlorocarbons into the atmosphere, and these are broken down by sunlight, releasing chlorine, which depletes ozone.) But that question, having been raised, is one of those which cannot be answered with confidence, given the present state of our knowledge of the workings of the earth. Even the estimates of ozone loss that would be brought about by holocausts of different sizes are highly uncertain (in calculating some of these figures, the National Academy of Sciences found the largest computers insufficient)—as is made clear in the 1975 N.A.S. report, which found that the explosion of ten thousand megatons of nuclear weapons would increase the amount of nitric oxide in the stratosphere to something between five and fifty times the normal amount (a tenfold uncertainty is characteristic of calculations in this field), that it would (as has been mentioned) reduce the ozone layer in the Northern Hemisphere, where the report assumes that the explosions would occur, by anything from thirty to seventy per cent, and that it would reduce it in the Southern Hemisphere by anything from twenty to forty per cent. I recently asked Dr. McElroy what the current estimation of danger to the ozone layer from man-made oxides of nitrogen in general was. "In the years after the N.A.S. report of 1975, the estimates of harm were lowered, but since about 1977 they have risen again," he told me. He went on to discuss a possible increase in nitrous oxide in the atmosphere brought about by, say, agricultural fertilizers. "At present, it is estimated that a doubling of the nitrous oxide in the troposphere, which becomes nitric oxide—one of the compounds that deplete ozone—after it reaches the stratosphere, would bring about a fifteen-per-cent reduction in the ozone. That is a higher estimate for the nitrous-oxide effect than the one made in 1975. However, a nuclear holocaust would inject nitric oxide directly into the stratosphere, and in amounts much greater than would be produced, indirectly, by the twofold increase in nitrous oxide, and no one has done any study of the consequences for the ozone of these larger amounts in the light of the knowledge acquired since 1975. But my guess is that the figures would not have changed radically, and that the estimates for ozone reduction by a nuclear holocaust given in 1975 would not be far off." In mid-1981, the first measurement of an actual reduction of the ozone layer was made. The National Aeronautics and Space Administration reported "preliminary" findings indicating that ozone in a region of the stratosphere some twenty-five miles up—in the higher part of the ozone layer—had decreased at the rate of approximately half a per cent a year over the past decade. While this chilling discovery does not bear directly on the consequences of a holocaust for the ozone, it does tend to confirm the more general hypothesis that the ozone is vulnerable to human intervention.

The extent of the biological damage that would be done by various increases in ultraviolet radiation is, if anything, even less well known than what the increases caused by nuclear detonations might be, but the available information suggests that the damage to the whole ecosphere would be severe. One reason is that certain wavelengths of ultraviolet that are known to be particularly harmful biologically would be disproportionately increased by ozone reduction. Moreover, the cause of the biological damage—increased ultraviolet radiation—would be similar everywhere, but the effects would be different for each of the earth's species and ecosystems. And the effects of those effects, spreading outward indefinitely through the interconnected web of life, are not within the realm of the calculable. However, it is known with certainty that ultraviolet radiation is harmful or fatal to living things. In fact, precisely because of its abiotic qualities ultraviolet light has long been in use as a sterilizing agent in medical and other scientific work. The most comprehensive study of ultraviolet's effects which has been done so far is the Department of Transportation's Climatic Impact Assessment Program report "Impacts of Climatic Change on the Biosphere." It states that "excessive UV-B radiation"—the part of the ultraviolet spectrum which would be significantly increased by ozone depletion—"is a decidedly detrimental factor for most organisms, including man," and continues, "Even current levels of solar UV-B irradiance can be linked with phenomena such as increased mutation rates, delay of cell division, depression of photosynthesis in phytoplankton, skin cancer in humans, cancer eye in certain cattle, and lethality of many lower organisms, such as aquatic invertebrates and bacteria."

Research concerning the effects of UV-B irradiance on specific organisms—and especially on organisms in their natural habitats—has been slight, and in a recent conversation Dr. Caldwell, who was chairman of the scientific panel that produced the Climatic Impact Assessment Program report, told me that not enough experiments have been done for anyone to generalize with confidence about the ultimate fate of living things subjected to increased ultraviolet radiation. From the experiments that have been done, however, it is known that, among mammals, human beings are especially vulnerable, because of their lack of body hair. Since some ultraviolet light reaches the earth in normal circumstances, human beings (and other creatures) have developed adaptations to deal with it. The main adaptation in man is tanning, which helps to prevent sunburn. The susceptibility of fair-skinned people to these ailments and also to skin cancer is traceable to their relative inability to tan, and one consequence of reduced ozone could be higher rates of skin cancer among human beings. Of much greater seriousness, though, would be the temporary loss of sight through photophthalmia, or snow blindness, which can be contracted by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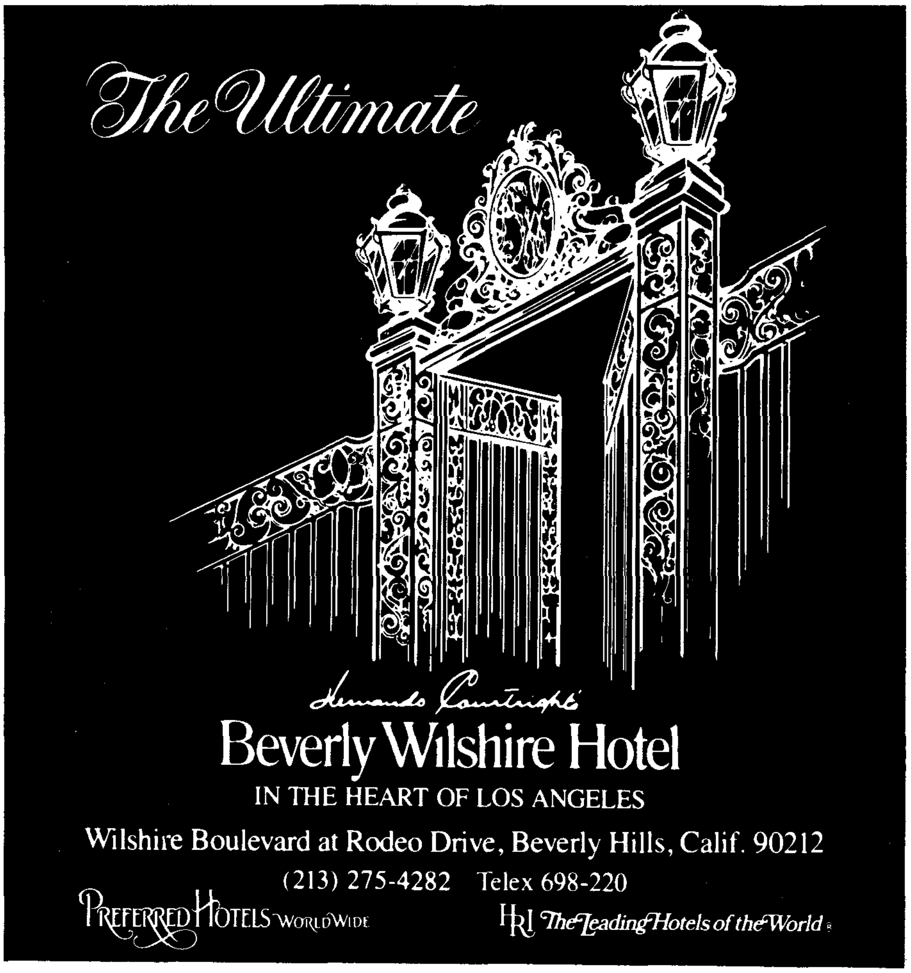
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exposure to heightened ultraviolet radiation and may last for several days after each exposure. Photophthalmia is, in the words of the 1975 N.A.S. report, "disabling and painful;" also, "there are no immune groups," and "there is no adaptation." One can avoid photophthalmia by wearing goggles whenever one goes outside, but so far the world has made no provision for each person on earth to have a pair of goggles in case the ozone is depleted. However, if the higher estimates of depletion turn out to be correct, people will not be able to stay outdoors very long anyway. At these levels, "incapacitating" sunburn would occur in several minutes; if the reduction of the ozone reached the seventy-per-cent maximum that the report assigns to the Northern Hemisphere, the time could be ten minutes. Moreover, the report states that in the months immediately following the attack ozone depletion could be even higher than seventy per cent. "We have no simple way," the report observes, "to estimate the magnitude of short-term depletion." The ten-minute rule is not one that the strategists of "recovery" after a nuclear attack usually figure into their calculations. If high levels of ultraviolet radiation occur, then anyone who crawls out of his shelter after radiation from fallout has declined to tolerable levels will have to crawl back in immediately. In the meantime, though, people would not have been able to go out to produce food, and they would starve. A further possible harmful consequence—in itself a potential human and ecological catastrophe of global proportions—is that increased ultraviolet light would raise the amounts of Vitamin D in the skin of mammals and birds to toxic levels. But the experimentation necessary to determine whether or not this sweeping catastrophe would occur has not been done. The 1975 N.A.S. report observes, alarmingly but inconclusively, "We do not know whether man and other vertebrate animals could tolerate an increased Vitamin D synthesis that might result from a large and rapid increase in [ultraviolet] exposure." The report "urgently" recommends further study of the question.

The skin of many mammals would be protected by fur or other covering, but their eyes would remain exposed. In a recent lecture, Dr. Tsipis said that ozone reduction might bring about the blinding of the world's animals, and that this effect alone would have the makings of a global ecological catastrophe. I discussed the subject with Dr. Frederick Urbach, who teaches medicine at Temple University and is the editor of a volume titled "The Biologic Effects of Ultraviolet Radiation with Emphasis on the Skin," and who has conducted extensive research on the effect of ultraviolet radiation on animals. He confirmed that the peril to the eyes of animals is vast and real. "If you go much above fifty per cent reduction of the ozone, the increase in ultraviolet radiation begins to do injury to the cornea," he told me. "You get a bad sunburn of the eye. People don't usually get it, because at normal levels the anatomy of the face gives protection. But when there is snow on the ground the ultraviolet radiation is reflected back up into the eye. The problem is easily remedied by wearing glasses, but animals will hardly be able to do that. There is a story—probably apocryphal—that when Hannibal crossed the Alps, where ultraviolet is more intense, some of his elephants went blind. When animals can't see, they can't protect themselves. A blind animal does not survive well in nature. Repeated injury causes scarring of the cornea, and this would eventually make the animals permanently blind. We see this happening to the mice that we irradiate with ultraviolet wavelengths in the laboratory; after a while, they develop opaque corneas. In the event of ozone depletion, the same thing would happen not only to mammals but to insects and birds."

Sight and smell permit animals to find their way in the environment and to fulfill the roles mapped out for them by nature, and the loss of sight would throw the environment into disarray as billions of blinded beasts, insects, and birds began to stumble through the world. The disorientation of insects would be fateful not only for them but for plant life, much of which depends on insects for pollination and other processes essential to survival. Ultraviolet light is, in fact, known to play a role in many activities of insects, including phototaxis, celestial navigation, and sex identification, and an increase in ultraviolet light

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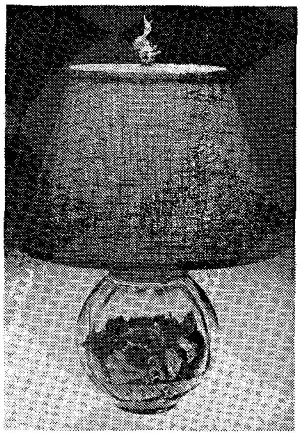

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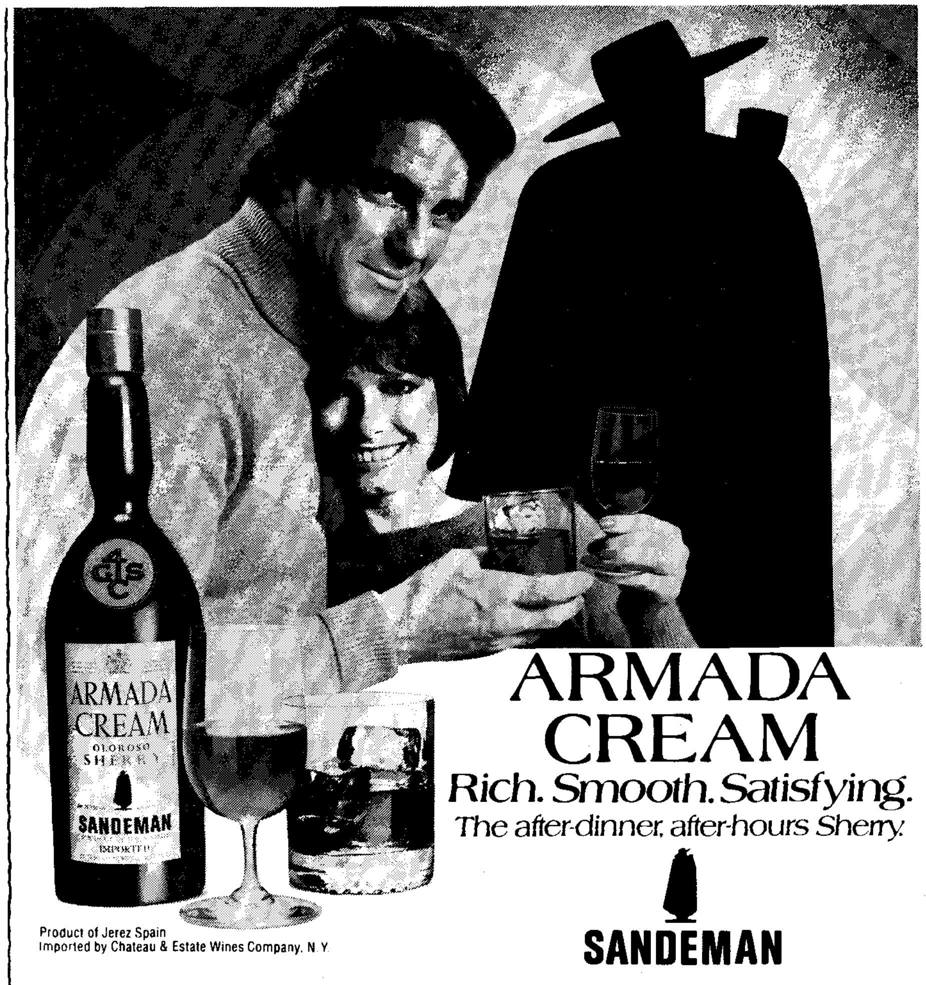
would no doubt impair these capacities. But plant life would in any case be under direct assault from increased ultraviolet radiation. While confident generalization about the fate of plants has to be ruled out, experiments that have been performed with crops show that while some are quite resistant, others, including tomatoes, beans, peas, and onions, would be killed or "severely scalded," according to the N.A.S. report. Because ultraviolet radiation breaks down DNA, which regulates reproduction, and because it also represses photosynthesis, which is the chief metabolic process of plants, the direct effect of increased ultraviolet radiation on plant life is likely to be widespread and serious. And because many species, the N.A.S. report states, "survive at an upper limit of tolerance," any increase in ultraviolet radiation is "a threat to the survival of certain species and accordingly to entire ecosystems." The global damage to plants and the global damage to the insects are synergistic: the damage to the insects damages the plants, which, in turn, damage the insects again, in a chain of effects whose outcome is unforeseeable. On the question of the harm to the insects that would be caused by the harm to the rest of the ecosphere, Ting H. Hsiao, a professor of entomology at Utah State University, has written in the Climatic Impact Assessment Program report, "Since insects are important in the world's ecosystems, any changes in other components of the ecosystem could have an impact on insect populations. Ultraviolet radiation is a physical factor that directly influences all biotic components of the ecosystem. . . . A change in abiotic factors, such as temperature, rainfall, or wind, associated with elevated ultraviolet radiation could profoundly affect behavior, biology, population structure, dispersal, and migration of insects." Dr. Hsiao's observations about insects and the ecosphere can, in fact, be generalized to include all global effects of a holocaust, for there are few that do not have potential large consequences for the character and severity of all the others.

The web of life in the oceans, perhaps more than any other part of the environment, is vulnerable to damage from increased ultraviolet radiation. John Calkins, of the Department of Radiation Medicine of the University of Kentucky, and D. Stuart Nachtwey, a professor of radiation biology at Oregon State University, remark in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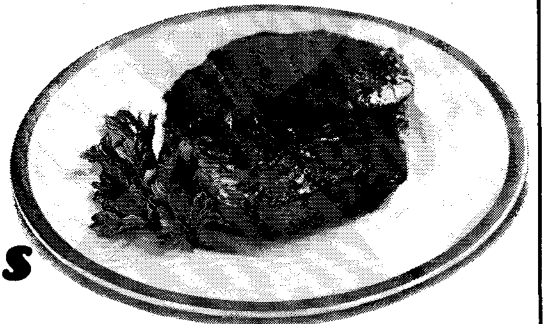

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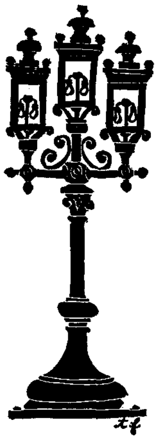
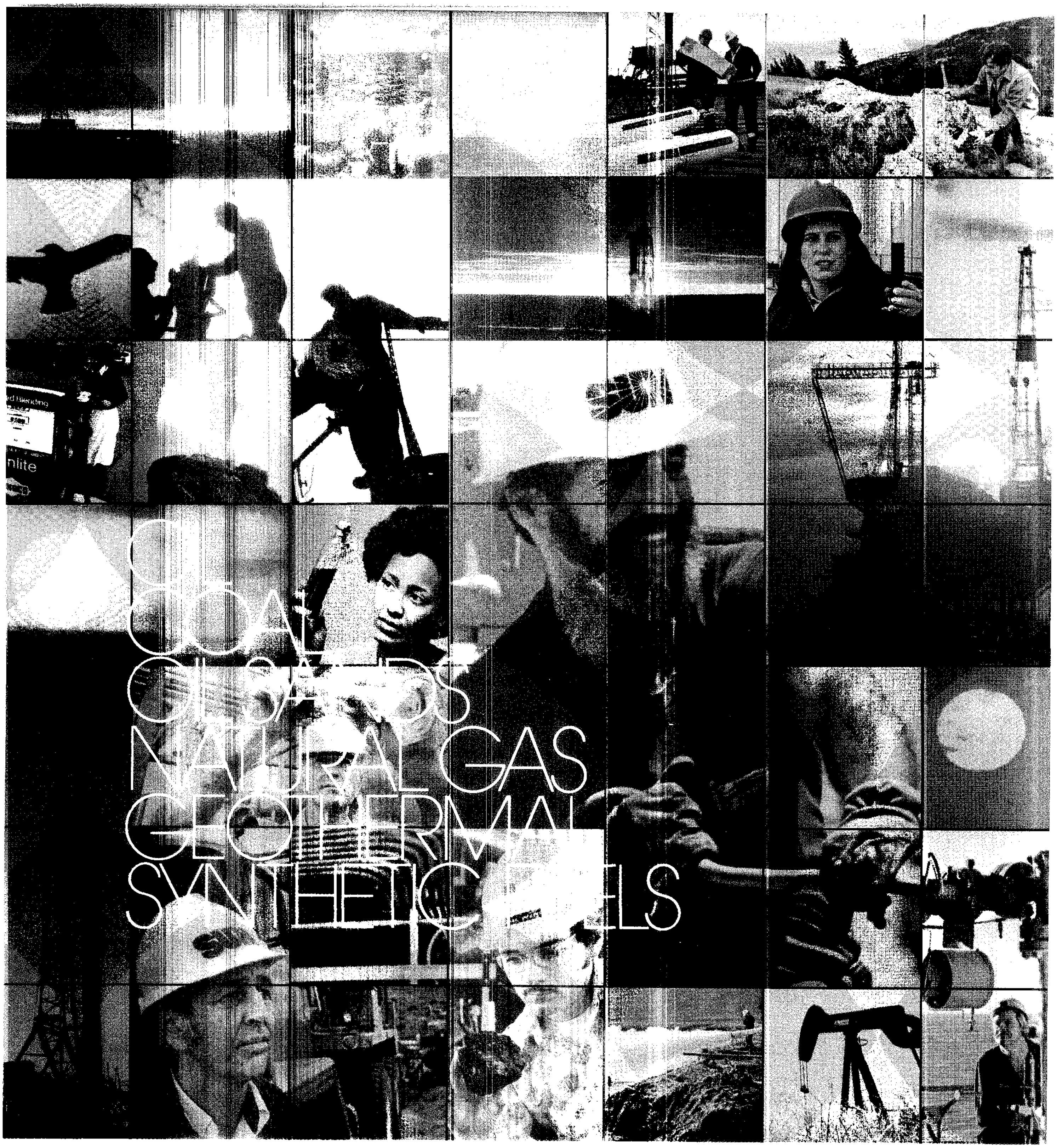
the Climatic Impact Assessment Program report that the experimentation that has been done so far, though it is inadequate, suggests that "many aquatic micro-organisms and invertebrates have little reserve capacity to cope with surface levels of solar UV-B." The organisms at greatest risk are the unicellular organisms that lie at the base of the marine food chain, and thus ultimately sustain the higher creatures in the oceans.



Since the removal of an organism from the food chain can eliminate all the organisms above it in the chain, the loss of even part of the chain's base could have huge consequences. Once again, quantitative judgments are not possible, but such experiments as have been carried out make the danger clear. In the early nineteen-seventies, researchers discovered that even normal levels of UV-B radiation are harmful or fatal to many aquatic organisms if they are not permitted to descend deeper into the water or otherwise shield themselves from exposure. The finding is important, because it means that the question to be asked about increased UV-B radiation is not whether it would be biologically harmful but whether the intensity would be great enough to overpower the mechanisms of defense that organisms have built up over billions of years of evolution to deal with normal levels of ultraviolet radiation. The defense mechanisms include the screening of the DNA molecules with less critical molecules; enzymatic mechanisms by which damage done in the daytime is repaired at night; and delay of cell division (when cells can be most sensitive to ultraviolet radiation) until the nighttime. But fleeing, which can save some organisms from the ultraviolet peril, may get them into other kinds of trouble. In general, organisms find the niche in the environment that is best suited to them, and if they are suddenly forced to leave it they may die. Or, if they survive, they may destroy the ecological niche that permits some other species to survive. If a change in the environment occurs slowly, an organism may prove able to adapt, but a holocaust would bring a sudden change, and the usefulness of adaptation would be greatly reduced. A glimpse of a few of the complexities involved in ultraviolet stress is offered by some experiments that were done by Dr. Nachtwey and several colleagues on the unicellular alga called *Chlamydomonas reinhardi*. If the alga is resting near the surface of the ocean on a cloudy day, and the sun suddenly appears, it will dive for safety, and if ultraviolet radiation is at normal levels it will get deep enough fast enough to survive. But if the ozone has been decreased by as little as sixteen per cent, the alga will be killed in mid-dive by the more intense ultraviolet rays. The crucial factor for *C. reinhardi* turns out to be its swimming speed.

Because experimentation has been so slight, and because the complexities are so immense, both the Climatic Impact Assessment Program report and the N.A.S. report hold back from sweeping judgments about the fate of oceanic life as a whole in the event of severe ozone reduction, but at one point the N.A.S. report does state that "under extreme circumstances, certain habitats could become devoid of living organisms," and at another point, speaking of the global effects in their entirety, it states, "Large-scale detonations will create conditions sufficient to modify the oceanic environment, on a global basis, with a resultant modification of the marine biota. In areas of major perturbations this influence will be in the form of local or extensive extinctions or reduction in susceptible species, with a subsequent disruption of the normal food web."

A second global consequence of ozone reduction would be climatic change. The earth's climate, like the ecosphere as a whole, the 1975 N.A.S. report reminds us, is "holocoenotic;" in other words, it is a whole in which "any action influencing a single part of the system can be expected to have an effect on all other parts of the system." As is hardly surprising, the totality of those effects is unknown even for a single major climatic disturbance, and the N.A.S. report notes that "no adequate climatic models exist that would permit prediction of the nature and degree of climatic changes that might result from a large-scale nuclear event." Of the three large components of the earth's surface—land, sea, and air—the air is probably the most changeable. The parts of this delicately balanced whole include, among many others, the chemical composition of both the troposphere and the stratosphere; the temperature levels of the atmosphere and the de-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gree of moisture at all altitudes; the temperature and reflectivity of the earth's surface; the circulatory patterns of the air; the circulatory patterns of the ocean currents; and the degree of retention of the earth's reflected warmth by the atmosphere, in the so-called greenhouse effect. Each of these parts could be disturbed by a holocaust, and the disturbance of any one could disturb many or all of the others. According to present thinking, a depletion of the ozone layer would simultaneously act to warm the surface of the earth, by permitting more solar radiation to reach it, and act to cool it, by reducing the layer's capacity to radiate back to earth the heat reflected from the earth's surface. But, according to the N.A.S. report, the cooling at the surface of the earth, which might last for several years, is expected to exceed the warming by, at most, an amount estimated (very tentatively, considering that "no adequate climatic models exist") at approximately one degree Fahrenheit. Temperature change at the surface, however, may be less important than temperature change elsewhere in the atmosphere. For example, cooling of the upper troposphere and of the lower stratosphere "is likely to be much larger" than cooling at the surface, and may cause alterations in the cloud cover, which would, in turn, influence the climate. This whole subject, however, is one of the many subjects that remain relatively unexplored. It is estimated that dust and smoke lofted by the explosions would add to the cooling by another degree Fahrenheit. Temperatures on earth can fluctuate tens of degrees in a single day, yet the net reduction of a couple of degrees in the temperature of the entire surface of the earth after a holocaust would be of great consequence. For example, it could cut the biological productivity of deciduous forests by as much as twenty per cent, shift the monsoons in Asia in a way that could be ruinous for both agriculture and ecosystems, and eliminate all wheat-growing in Canada. The N.A.S. report also mentions that climatic change identified as "dramatic" and "major," but not otherwise specified, "cannot be ruled out," and adds that although the change is likely to last only a few years, the possibility exists that it "may not be reversible." Greater reductions would, of course, have larger consequences. Another global consequence of the injection of oxides of nitrogen into the stratosphere by nuclear explosions would be pollution of the environment as these gases fell back into the troposphere. Nitrogen dioxide, for example, is one of the most harmful components of the smog that afflicts many modern cities, such as Los Angeles. It reacts with hydrocarbons present in the air above these cities, actually causing in the process some ozone formation. While ozone in the stratosphere is beneficial to human beings, ozone near ground level is not. It has been found not only to increase respiratory problems among human beings but to be harmful to some plant life. The formation of nitrogen dioxide, accordingly, is still another global effect of a holocaust whose consequences are not calculable. In addition, nitrogen dioxide is responsible in polluted cities for turning the sky brown, and after a holocaust it might happen that the sky of the whole earth would turn from blue to brown for as long as the pollution lasted (perhaps several years).

The known consequences of global contamination by stratospheric fallout (as distinct from the tropospheric fallout on the targeted countries) would seem great in comparison with anything except other nuclear effects, but against this backdrop they seem moderate—although, as usual, the state of knowledge precludes confident prediction. The stratospheric portion of the fallout is much less intense than the tropospheric portion, because it can remain in the atmosphere for several years, and by the time it descends to earth its radioactivity has declined to very low levels. The N.A.S. report estimates that a ten-thousand-megaton holocaust would deliver over the following twenty to thirty years a dose of four rems to every person in the Northern Hemisphere and a third of that to every person in the Southern Hemisphere, and would cause a two-per-cent rise in the death rate from cancer. The same doses would cause serious genetic disease to increase around the world by up to about two per cent, with a noticeable but decreasing number of mutations appearing in the next thirty generations. There would, however, be "hot spots" in some parts of the world, where, because of certain patterns of weather, the doses of radiation would be many times as great. Also, the world would be contaminated with particles of plutonium, which would

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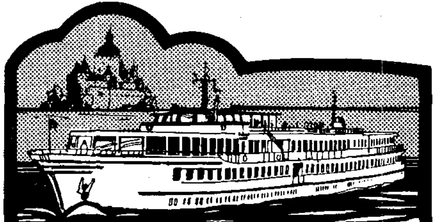

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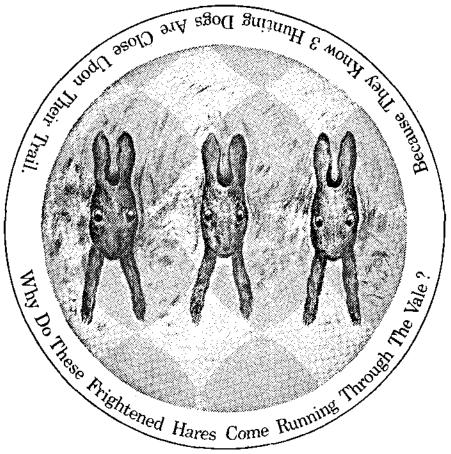
cause an as yet unestimated rise in the incidence of lung cancer. (All these effects, which were calculated by the N.A.S. in 1975 for a ten-thousand-megaton holocaust, would presumably be greater in a twenty-thousand-megaton holocaust.)

IN recent years, scientists in many fields have accumulated enough knowledge to begin to look on the earth as a single, concrete mechanism, and to at least begin to ask how it works. One of their discoveries has been that life and life's inanimate terrestrial surroundings have a strong reciprocal influence on each other. For life, the land, oceans, and air have been the environment, but, equally, for the land, oceans, and air life has been the environment—the conditioning force. The injection of oxygen into the atmosphere by living things, which led to the formation of an ozone layer, which, in turn, shut out lethal ultraviolet rays from the sun and permitted the rise of multicellular organisms, was only one of life's large-scale interventions. The more closely scientists look at life and its evolution, the less they find it possible to draw a sharp distinction between "life," on the one hand, and an inanimate "environment" in which it exists, on the other. Rather, "the environment" of the present day appears to be a house of unimaginable intricacy which life has to a very great extent built and furnished for its own use. It seems that life even regulates and maintains the chemical environment of the earth in a way that turns out to suit its own needs. In a far-reaching speculative article entitled "Chemical Processes in the Solar System: A Kinetic Perspective," Dr. McElroy has described the terrestrial cycles by which the most important elements of the atmosphere—oxygen, carbon, and nitrogen—are kept in proportions that are favorable to life. He finds that in each case life itself—its birth, metabolism, and decay—is chiefly responsible for maintaining the balance. For example, he calculates that if for some reason respiration and decay were suddenly cut off, photosynthesis would devour all the inorganic carbon on the surface of the ocean and in the atmosphere within forty years. Thereafter, carbon welling up from the deep ocean would fuel photosynthesis in the oceans for another thousand years, but then "life as we know it would terminate." Dr. McElroy also observes that the amount of ozone in the stratosphere is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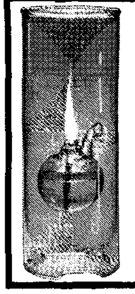

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influenced by the amount of organic decay, and thus by the amount of life, on earth. Nitrous oxide is a product of organic decay, and because it produces nitric oxide—one of the compounds responsible for ozone depletion—it plays the role of regulator. In the absence of human intervention, living things are largely responsible for introducing nitrous oxide into the atmosphere. When life is exceptionally abundant, it releases more nitrous oxide into the atmosphere, and may thus act to cut back on the ozone, and that cutback lets in more ultraviolet rays. On the other hand, when life is sparse and depleted, nitrous-oxide production is reduced, the ozone layer builds up, and ultraviolet rays are cut back. These speculative glimpses of what might be called the metabolism of the earth give substance to the growing conviction among scientists that the earth, like a single cell or a single organism, is a systemic whole, and in a general way they tend to confirm the fear that any large man-made perturbation of terrestrial nature could lead to a catastrophic systemic breakdown. Nuclear explosions are far from being the only perturbations in question; a heating of the global atmosphere through an increased greenhouse effect, which could be caused by the injection of vast amounts of carbon dioxide into the air (for instance, from the increased burning of coal), is another notable peril of this kind. But a nuclear holocaust would be unique in its suddenness, which would permit no observation of slowly building environmental damage before the full—and, for man, perhaps the final—catastrophe occurred. The geological record does not sustain the fear that sudden perturbations can extinguish all life on earth (if it did, we would not be here to reflect on the subject), but it does suggest that sudden, drastic ecological collapse is possible. It suggests that life as a whole, if it is given hundreds of millions of years in which to recuperate and send out new evolutionary lines, has an astounding resilience, and an ability to bring forth new and ever more impressive life forms, but it also suggests that abrupt interventions can radically disrupt any particular evolutionary configuration and dispatch hundreds of thousands of species into extinction.

The view of the earth as a single system, or organism, has only recently proceeded from poetic metaphor to actual scientific investigation, and on the whole Dr. Thomas's observation that

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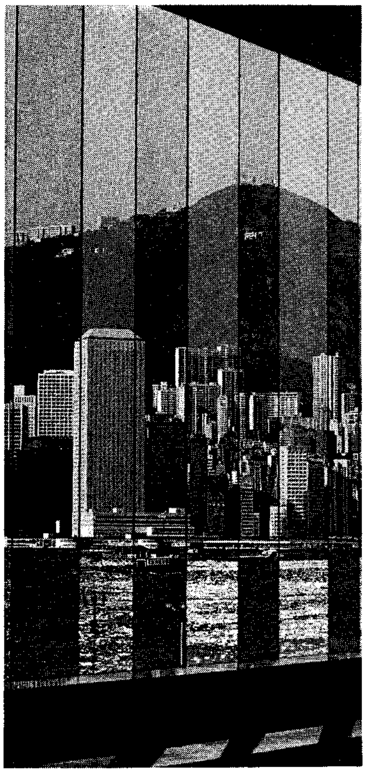
"With a view of Hong Kong like this, I don't know why they bother to have curtains."



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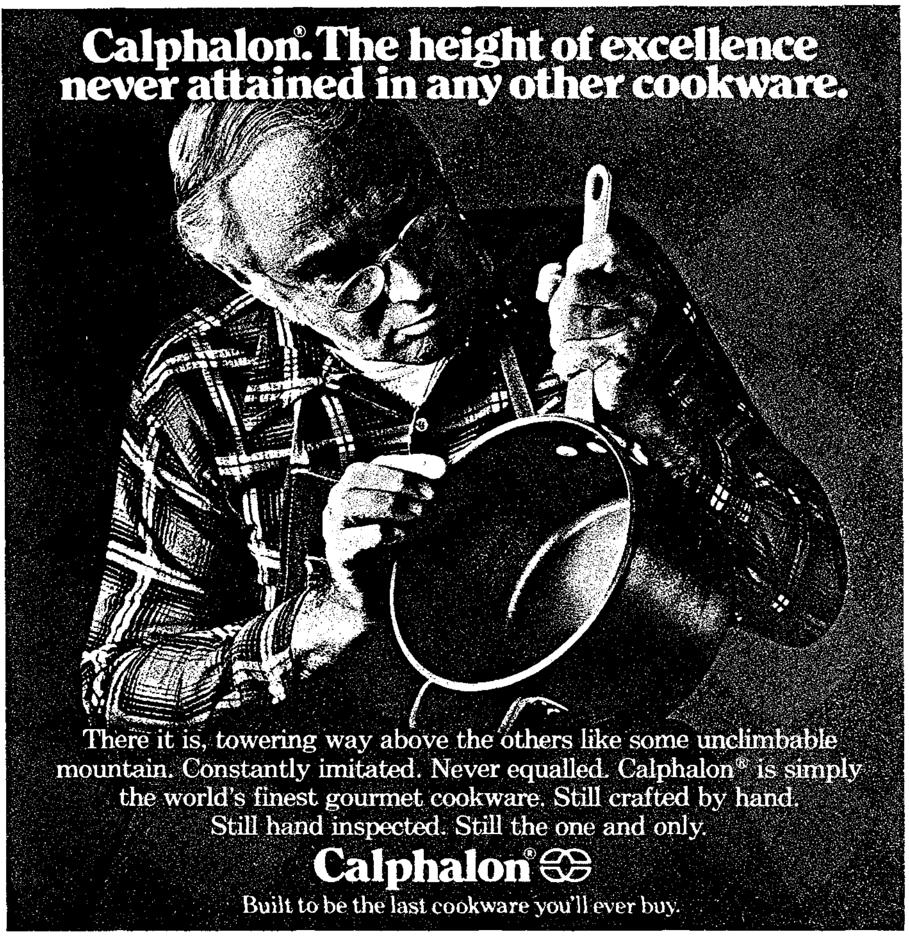
"we do not really understand nature, at all" still holds. It is as much on the basis of this ignorance, whose scope we are only now in a position to grasp, as on the basis of the particular items of knowledge in our possession that I believe that the following judgment can be made: Bearing in mind that the possible consequences of the detonations of thousands of megatons of nuclear explosives include the blinding of insects, birds, and beasts all over the world; the extinction of many ocean species, among them some at the base of the food chain; the temporary or permanent alteration of the climate of the globe, with the outside chance of "dramatic" and "major" alterations in the structure of the atmosphere; the pollution of the whole ecosphere with oxides of nitrogen; the incapacitation in ten minutes of unprotected people who go out into the sunlight; the blinding of people who go out into the sunlight; a significant decrease in photosynthesis in plants around the world; the scalding and killing of many crops; the increase in rates of cancer and mutation around the world, but especially in the targeted zones, and the attendant risk of global epidemics; the possible poisoning of all vertebrates by sharply increased levels of Vitamin D in their skin as a result of increased ultraviolet light; and the outright slaughter on all targeted continents of most human beings and other living things by the initial nuclear radiation, the fireballs, the thermal pulses, the blast waves, the mass fires, and the fallout from the explosions; and, considering that these consequences will all interact with one another in unguessable ways and, furthermore, are in all likelihood an incomplete list, which will be added to as our knowledge of the earth increases, one must conclude that a full-scale nuclear holocaust could lead to the extinction of mankind.

To say that human extinction is a certainty would, of course, be a misrepresentation—just as it would be a misrepresentation to say that extinction can be ruled out. To begin with, we know that a holocaust may not occur at all. If one does occur, the adversaries may not use all their weapons. If they do use all their weapons, the global effects, in the ozone and elsewhere, may be moderate. And if the effects are not moderate but extreme, the ecosphere may prove resilient enough to withstand them without breaking down catastrophically. These are all substantial reasons for supposing that mankind will not be extinguished in a nuclear holocaust, or even that extinction in a holocaust is unlikely, and they tend to calm our fear and to reduce our sense of urgency. Yet at the same time we are compelled to admit that there *may* be a holocaust, that the adversaries *may* use all their weapons, that the global effects, including effects of which we are as yet unaware, *may* be severe, that the ecosphere *may* suffer catastrophic breakdown, and that our species *may* be extinguished. We are left with uncertainty, and are forced to make our decisions in a state of uncertainty. If we wish to act to save our species, we have to muster our resolve in spite of our awareness that the life of the species may not now in fact be jeopardized. On the other hand, if we wish to ignore the peril, we have to admit that we do so in the knowledge that the species may be in danger of imminent self-destruction. When the existence of nuclear weapons was made known, thoughtful people everywhere in the world realized that if the great powers entered into a nuclear-arms race the human species would sooner or later face the possibility of extinction. They also realized that in the absence of international agreements preventing it an arms race would probably occur. They knew that the path of nuclear armament was a dead end for mankind. The discovery of the energy in mass—of "the basic power of the universe"—and of a means by which man could release that energy altered the relationship between man and the source of his life, the earth. In the shadow of this power, the earth became small and the life of the human species doubtful. In that sense, the question of human extinction has been on the political agenda of the world ever since the first nuclear weapon was detonated, and there was no need for the world to build up its present tremendous arsenals before starting to worry about it. At just what point the species crossed, or will have crossed, the boundary between merely having the technical knowledge to destroy itself and actually having the arsenals at hand, ready to be used at any second, is not precisely knowable. But it is clear that at present, with some twenty thousand megatons of nuclear explosive power in existence, and with more being added every day, we have entered into the zone of uncertainty, which is to say the zone of risk of extinction. But the mere risk of extinction has a significance that is categorically different from, and immeasurably greater than, that of any other risk, and as we make our decisions we have to take that significance into account. Up to now, every risk has been contained within the frame of life; extinction would shatter the frame. It represents not the defeat of some purpose but an abyss in which all human purposes would be drowned for all time. We have no right to place the possibility of this limitless, eternal defeat on the same footing as risks that we run in the ordinary conduct of our affairs in our particular transient moment of human history. To employ a mathematical analogy, we can say that although the risk of extinction may be fractional, the stake is, humanly speaking, infinite, and a fraction of infinity is still infinity. In other words, once we learn that a holocaust *might* lead to extinction we have no right to gamble, because if we lose, the game will be over, and neither we nor anyone else will ever get another chance. Therefore, although, scientifically speaking, there is all the difference in the world between the mere possibility that a holocaust will bring about extinction and the certainty of it, morally they are the same, and we have no choice but to address the issue of nuclear weapons as though we knew for a certainty that their use would put an end to our species. In weighing the fate of the earth and, with it, our own fate, we stand before a mystery, and in tampering with the earth we tamper with a mystery. We are in deep ignorance. Our ignorance should dispose us to wonder, our wonder should make us humble, our humility should inspire us to reverence and caution, and our reverence and caution should lead us to act without delay to withdraw the threat we now pose to the earth and to ourselves.

In trying to describe possible consequences of a nuclear holocaust, I have mentioned the limitless complexity of its effects on human society and on the ecosphere—a complexity that sometimes seems to be as great as that of life itself. But if these effects should lead to human extinction, then all the complexity will give way to the utmost simplicity—the simplicity of nothingness. We—the human race—shall cease to be. —JONATHAN SCHELL

(*This is the first part of a three-part article.*)



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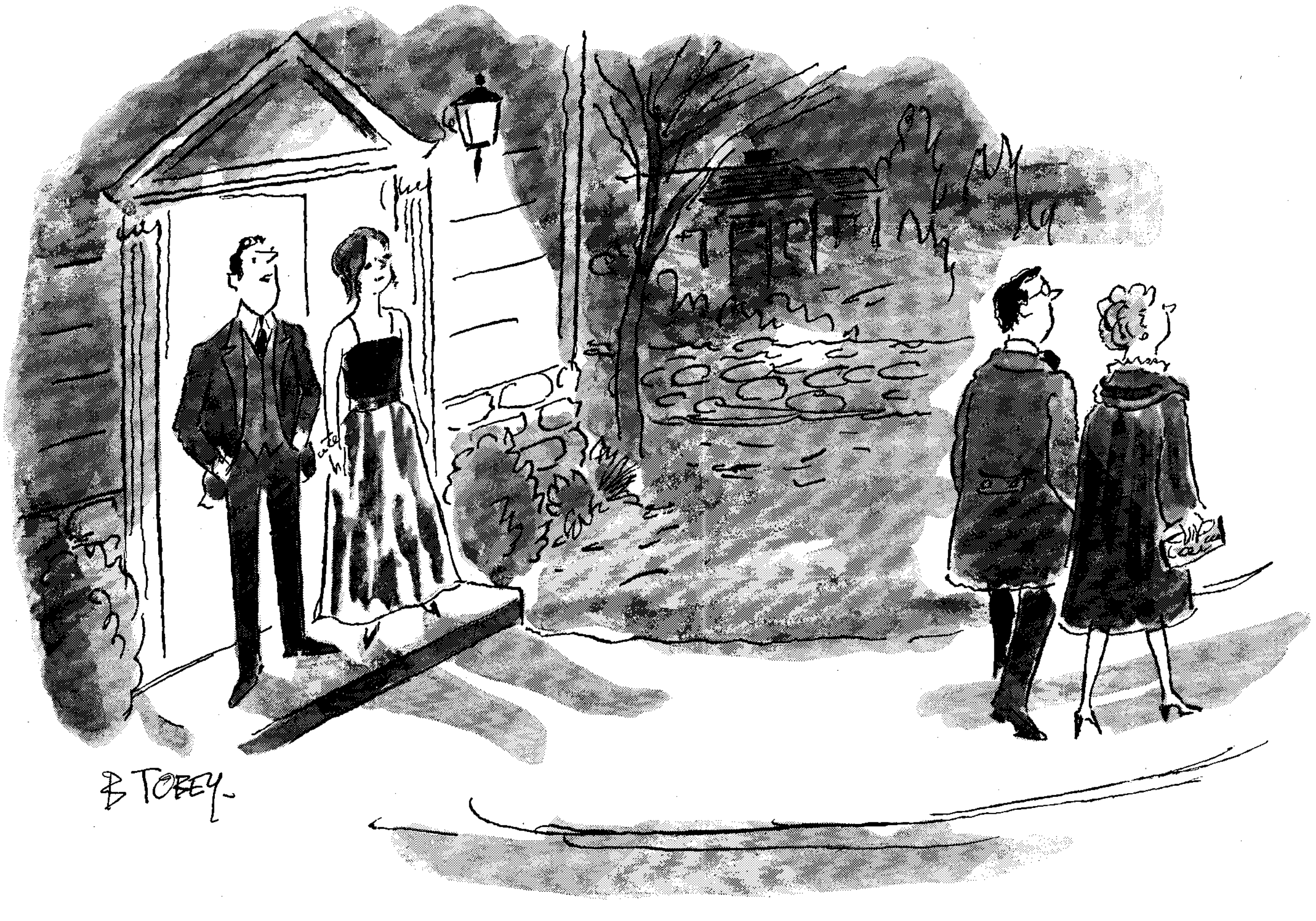
THE THEATRE

Ugly Jokes

"LITTLE ME," at the Eugene O'Neill, is among the most unpleasant musicals I've ever seen. It isn't so much a revival of a work first produced here twenty years ago, and starring Sid Caesar, as a reconstruction of that work. The reconstruction (which, among other things, drops the character of Patrick Dennis, who wrote the flimsy novel on which the musical is based) is anything but an improvement; for example, as the opening scene was originally staged it took place in Belle Poitrine's luxurious mansion in Southampton; now it takes place in a seedy night club in Hackensack, where an aging, on-the-skids Belle is singing old songs, continually forgetting her accompanist's name, and telling the story of her life. Her story isn't intended to be an edifying one, but I am appalled at the gratuitous cruelty with which Neil Simon, author of the book, sets up his succession of ugly jokes. As her name sufficiently implies, Belle is celebrated for having big breasts. In the 1962 version of "Little Me," she was said to have been born in Venezuela, Illinois; in the present version, we learn that she was born in Twin Jugs, Illinois. Funny? No, just nastily puerile, as is the maiden name chosen for the heroine: Belle Poitrine was born Belle Schlumpfert, and "*Schlumpe*" is German for "slut." Still more hilarious to Simon and his colleagues is the fact that Belle's mother is a prostitute, that she lives in a shack on Drifters' Row, and that when the rich boys and girls come down from the big houses on the bluff one of them sniffs the air and asks, "What's that horrible odor?," to which the reply is "Smells like poverty!" No joke in "Little Me" rises very far above that level of crudity and harshness, and there are scores of jokes that are its sorry equals. Moreover, almost every scene ends in a blackout the occasion for which is a sudden death; murder, inadvertent suicide, drowning, and warfare carry off one principal figure after another, and we in the audience are supposed to be in stitches over the comedy of their gruesome fates.

My indictment of the inhumanity of "Little Me" must be kept brief lest I invite the conventional rebuke of taking far too seriously what is, after all only a series of silly little skits. The fact is that I do take seriously Simon's place in our theatre; his last play on Broadway was entitled "Fools," and I was at a loss to understand then—as I am at a loss to understand now—the nature of the contempt he appears to feel both for the people he writes about and for the audiences whose approbation he so evidently seeks. Meanwhile, let me note that the agreeable music and lyrics of "Little Me," by Cy Coleman and Carolyn Leigh, stand up well after a couple of decades. The sets and costumes for this production are by Tony Walton, who has had an off day indeed; the lighting is by Beverly Emmons; the choreography is by Peter Gennaro; and the inept direction is by Robert Drivas. The many roles played by Sid Caesar in the original have been divided between James Coco and Vic-



"I like the Rawsons. They come late and leave early."

tor Garber; my sympathy went out to them, as it did to Jessica James and Mary Gordon Murray, who play, respectively, Belle in middle age and Belle in adolescence.

William Alfred's "The Curse of an Aching Heart," at the Little Theatre, is a sentimental journey to a long-vanished Brooklyn—or perhaps to a Brooklyn that never existed. Alfred, who is currently the Abbott Lawrence Lowell Professor of the Humanities at Harvard, is a proud native of our city, and what he has sketched for us here, in a number of short scenes, amounts to a highly colored oleograph of his Irish Catholic childhood and youth, beginning in the early nineteen-twenties and running up to the Second World War. The sentimentality I speak of has imposed a curious time warp upon the historical materials with which the playwright pretends to be working; much of what occurs in this little play evokes a period closer to the turn of the century than to the twenties, and I often got the impression that it was Alfred's grandparents' time that was being recollected, and not his own. The very title of the play strengthens our sense of time telescoped: "The Curse of an Aching Heart," published in 1913, cast a mockingly tearful glance back at the nineties; its equivalent in the twenties would have been "All Alone" or, better still, "Among My Souvenirs." John Lee Beatty's delightful sets (which include an enchanting summertime open trolley car) are also an anachronism; they are of McKinley's day, not Coolidge's.

Faye Dunaway is remarkably persuasive in the role of the heroine, Frances Anna Duffy Walsh, whom we first encounter at the age of fourteen, already fiercely independent, and whom we catch our last glimpse of nearly twenty years later, still eager to seize life and make it meet her by no means easy terms. Under the direction of Gerald Gutierrez, nearly everyone else in the cast plays too broadly, and one key scene collapses into a maudlin burlesque. Claibe Richardson has written some pleasing, hurdy-gurdy-like music, which serves to make the action of the play seem more nearly complete than it is. With one or two mighty exceptions, Irish playwrights when they write about the Irish tend to write valentines. The Abbott Lawrence Lowell Professor of the Humanities

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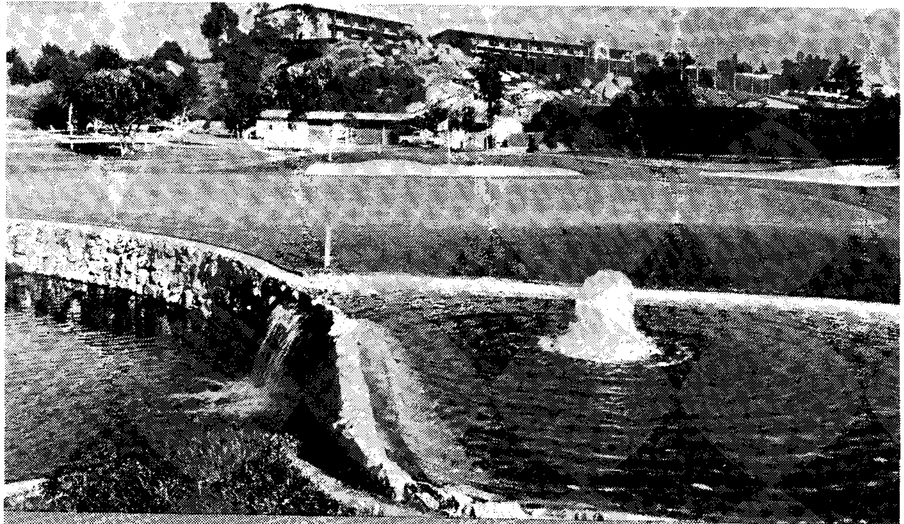

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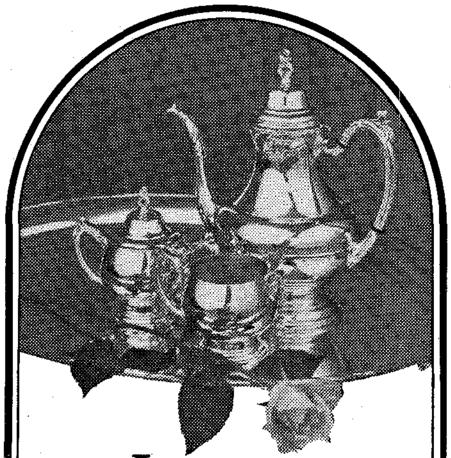

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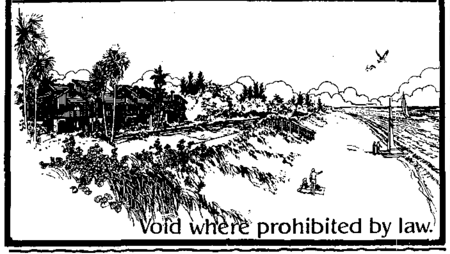

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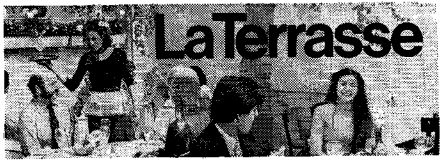

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OFF BROADWAY

Tripleheader

HARVEY FIERSTEIN'S "Torch Song Trilogy," with Mr. Fierstein in the leading role of a Jewish homosexual hustler and drag queen, received high critical praise Off Off Broadway, and it has now moved to the Actors Playhouse, Off Broadway. The praise is pretty much justified. In the first of the plays, "The International Stud" (which in fact opened at La Mama a couple of years ago), we see the day-to-day life of Mr. F.'s Arnold Beckoff, whom we meet in his dressing room backstage at the drag show in which he is appearing. As he makes up and stuffs his green satin gown with a toilet-paper bosom, he starts a sardonic, often funny, often sad monologue, always biting off any pathos or self-pity with a sharp one-liner. In a gay bar after the show, he picks up—actually, is picked up by—a very square, very Wasp bisexual schoolteacher named Ed, and falls in love with him. This affair provides the emotional background for all three plays. At the end of the first play, Arnold has learned in an agonized phone call that Ed is also in love with a woman, and he has more or less decided to accept the situation. In this play, Mr. Fierstein gives the kind of flamboyant performance that I usually don't care for much, but I must admit that here it seems justified and is certainly arresting.

In the second play, "Fugue in a Nursery," Ed has married his girl, and she has invited Arnold and his new lover, a male model named Alan, for the weekend, despite her husband's well-founded misgivings. Most of the action takes place in two double beds, one of them presumably in the guest room, and a good deal of assorted coupling goes on. The play ends with Arnold receiving and accepting, and starting to reciprocate, Alan's declaration of love for him. There are no monologues here; Arnold, without changing his sardonic style, plays to the other characters, and Mr. Fierstein shows himself to be a good actor as well as a good comic turn.

The last, most complex, funniest, most emotional (occasionally sentimental), and best of the plays, "Widows and Children First!" (Mr. Fierstein has a gift for apt titles), is set in Arnold's apartment. He is in the process of adopting a tough, funny, wise, extremely sophisticated, and possibly sinister homosexual street kid of sixteen named David, a veteran of juvenile courts and foster homes. Alan is dead, having been beaten to death on the street; Ed, separated from his wife and on the verge of divorce, is staying in Arnold's apartment until he can find one of his own. As the play opens, Arnold's Jewish mother is coming up from Miami for a visit. She knows nothing about David, and knows—and doesn't want to know—everything about her son. When she sees the boy and learns of the plan, she decides that Arnold is taking David in for his own corrupt purposes, and she and Arnold square off. The struggle between them provides the principal theme of the play. It is David, doubling as juvenile delinquent and deus ex machina, who recognizes mother and son as counterparts (in intelligence and style as well as in temperament), and it is he who recognizes that Arnold's and Ed's attraction for each other is an enduring one. Looking back, I can see that the boy's character is a bit too pat, too engineered for the dramatist's purpose, but I certainly accepted it without question at the time. Mr. Fierstein, a big man with big features, is extremely impressive in the role he wrote for himself (his grimaces, by the way—especially after Ed's square responses—are almost as funny to see as Lucky Jim's are to read about), and his Arnold, with his flashy comedy and easy softness at the beginning of the evening, has deepened by the end. He also has written the other characters well, and the actors rise to the occasion. Estelle Getty as Arnold's sharp and sharp-witted mother, with her own rage and grief, nettled by a situation she cannot change or control, must be the dramatist's dream come true. Matthew Broderick (my cousin, as it happens; aged nineteen and making his professional stage début) is also fine—funny and wounded and subtly dangerous—in the rich role of David. Joel Crothers is Ed; Paul Joynt is Alan; Diane Tarleton is a torch singer in Play I and Ed's wife in Play II. They are all good, too. Scenery by Leon Munier, costumes by Mardi Philips, lighting by Scott Pinkney, and original incidental music by Ada Janik.

GEORGE F. WALKER'S "Zastrozzi," at the Public, is an odd and baffling play that at least gives us a chance to see the enthralling Czech actor Jan Triska. Mr. Triska plays the itle role of an arch-criminal in nineeenth-century Europe who is out for vengeance against a virtuous and atuous painter—but for what reason I cannot tell you. I could not make head or tail of the plot, but then I tend to back away from allegories (if this is an allegory) about Good and Evil. It's mpossible to say whether there is any ntellectual depth or clarity in "Zasrozzi," but there is no denying its unflagging theatricality in the hands of Andrei Serban, who directed it. Besides Mr. Triska, the actors are Grzegorz Wagrowski (virtuous artist), Andreas Katsulas, Robert Langdon-Lloyd, Judith Roberts, and Frances Conroy, and I hope to see them all soon again, under less foggy circumstances. The exceptionally good scenery and costumes are by Manuel Lutgenhorst, and the lighting is by Jennifer Tipton.

TO record my impressions of the revival of Ibsen's "When We Dead Awaken," at the Open Space, I can do no better than quote Max Beerbohm, who was, of course, anything but the quintessential Ibsenite. Here is the closing passage from Beerbohm's essay on the occasion of the dramatist's death: "Throughout his life an artist essentially, he wrote in 'When We Dead Awaken' a savage attack on the artistic nature which he exemplified. And feeble though his final play is in execution, it seems to me deadlier in intention than any of the others. Perhaps it is but another instance of Ibsen's egoism that he reserved his most vicious kick for himself." The current production, for all the efforts of Tom Klunis, Kim Hunter and Anne Twomey, among others, is more worthy than gripping. —EDITH OLIVER

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THERE'LL ALWAYS BE AN ENGLAND

[*From "E. M. Forster: A Life," by P. N. Furbank*]

Alexandria: a History and a Guide finally appeared in the December of this year, and its fate now took an even odder turn. Soon after its publication, Forster received a regretful letter from Whitehead Morris & Co., informing him that there had been a fire in the warehouse and that the entire stock of *Alexandria* had been burnt. Fortunately, they said, it had been insured; and they enclosed a substantial cheque in compensation. A few weeks later he received another letter from the publishers. It was even more regretful. It said that, upon further search, the books had been found intact, in a cellar which had escaped the flames. This, in view of the insurance money, his publishers wrote, had created a most awkward situation, and they had taken the only way out—namely, to burn the books deliberately.

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THERE are easily recognizable danger signals:

When a director announces that the movie he is working on is "ahead of its time," you can guess that he's in deep trouble, because what he's saying is that the public won't know enough to appreciate what he has done.

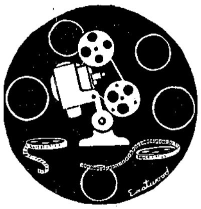
When a director announces that he is becoming a film "composer," you know he's saying that he doesn't have much in the way of a story or characters.

When a director says that his movie is about "fantasy and reality," you suspect he's carrying on in the ringmaster tradition of Fellini.

When a director starts talking about his "revolutionary" video-film technology, you squirm, because you're not sure you understand what he's saying, and the parts you do understand make you squirm even more.

Put it all together and it spells Francis Ford Coppola's "One from the Heart."

This movie isn't from the heart, or from the head, either; it's from the lab. It's all tricked out with dissolves and scrim effects and superimpositions, and even aural superimpositions—there's a song track, with Crystal Gayle and the growler, Tom Waits, telling us the meaning of what we're seeing, and wailing words of wisdom. "One from the Heart" is like a jewelled version of a film student's experimental pastiche—the kind set in a magical junk yard; there's nothing under the devices but a hope of distilling the essences of movie romance. And so even when Coppola hits on something eerily charming, such as an image of Nastassia Kinski as a Las Vegas showgirl wriggling for the customers' delectation inside a huge, neon-outlined Martini glass, he doesn't tie it in to anything. It's there simply because Coppola thought of it and was able to do it. You get the feeling that the movie grew by accretion—that he didn't think out the character relationships but simply piled visual ideas and comedy bits on top of the small story he started with until the movie became so jewel-encrusted that the story practically disappeared from sight and the movie turned into something like a poet's salute to the banal silver screen.



Coppola and his studio resources are always present in this film, in the same way that Fellini has become the star of his movies. And people in the audience at Radio City Music Hall, where the film had two sold-out previews on January 15th, applauded the swooping-in and pulling-back camera movements and the special effects and the pretty, painted scenery representing Las Vegas, just as audiences at stage plays sometimes applaud the set or the costumes. Visually, the film has the kind of stylization sometimes seen in the dance numbers of M-G-M Technicolor musicals of the forties and fifties—a deliberately artificial glow. It is studded with references to other movies, and the whole thing might be regarded as a giddy, unimpassioned variation on Scorsese's "New York, New York," which was set in the forties and employed a stylized, studio look though the actors talked in a semi-improvisatory, seventies-psychodrama manner. "One from the Heart" takes place in a studio-made Las Vegas, heavy on the neon and painted skies, and is set in a timeless present, with casual, throwaway dialogue.

When a director becomes the star of his movie—when his devices are chuckled over and applauded—the audience is, in a sense, applauding its own knowingness. And because it's a knowing audience it expects a lot. The chuckles are anticipatory, eager. They don't last as long as "One from the Heart" does, because eventually the audience realizes that there is nothing—literally nothing—happening except pretty images gliding into each other, and you can hear people saying to each other, "It's a pastry chef's movie," and "I didn't know Coppola had become such a ding-a-ling."

It's easier to get by with an empty hat in the context of Vietnam than it is in a metaphorical Las Vegas. In this fantasyland, Hank (Frederic Forrest), the stick-in-the-mud hero, is a partner in a junk-yard business called Reality Wrecking, and the heroine, Frannie (Teri Garr), who has been Hank's roommate for the past five years, works at the Paradise Travel Agency—but she has never been anywhere. It's the Fourth of July—Independence Day—and Frannie, bored with Hank, walks out on him. The holiday is treated like Mardi Gras, with crowds dancing through the street that the art director, Dean Tavoularis, has designed. All that day and night, the film crosscuts between Hank and Frannie, or they physically crisscross or go past each other, as Hank becomes involved with the showgirl and Frannie takes up with a singing and piano-playing Latin waiter (Raul Julia). Hank has a partner and confidant, played by Harry Dean Stanton, who looks tan and wiry and shows glimmers of a subversive sanity. Frannie has as her partner and confidante Lainie Kazan, whose décolletage is overpowering, but who has a frantic, funny routine talking about the horrors she goes through on dates as she dashes off to another one. Essentially, that's the cast and the story. These six flit about on the street set; everything seems to be happening on a large stage—as, in fact, it is. All we're asked to care about is whether Hank, who's in love with Frannie, will win her back. Or, rather, this story being negligible, what we're asked to respond to is Coppola's confectionery artistry.

Some artists become Jesus freaks; movie artists are more likely to become technology freaks. In interviews, Coppola has talked about directing from inside a trailer while watching the set on video equipment. This movie feels like something directed from a trailer. It's cold and mechanized; it's at a remove from its own action. The two main characters are always talking to each other through glass or when the other isn't there; Coppola seems more fascinated by reflections of the actors than by the actors themselves. And the video editing techniques that he uses seem to destroy the dramatic definition of the scenes; everything runs together—the movie is like melted ice cream. When the Mardi Gras crowds are milling about in the street, there's no excitement; the kind of energy that can be built into a sequence by conventional editing methods has been replaced by bland fluidity. The technique is self-cancelling. The most virtuoso effects—the ones that should reverberate with all the romance of the movie past—liquefy and are gone. Afterward, even your own thoughts seem to come to you by remote control, and a day later the picture is as blurry in the mind as the memory of a psychedelic light show.

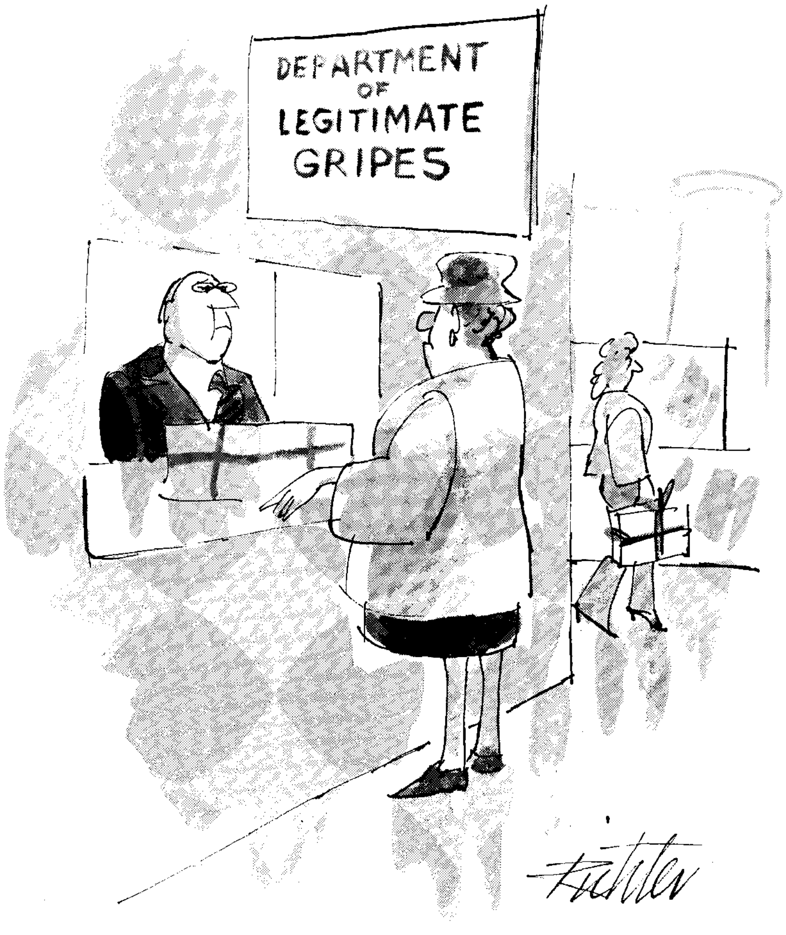
Some directors have begun to use video as a tool—for keeping track of the continuity and for other subsidiary functions—but Coppola has got to the point of talking as if the video equipment itself would direct his movies. It's almost as if he'd got beyond directing—as if he has to make it more of a game by complicating it and putting technology between the film and himself. The most you can say about "One from the Heart" is that it's pretty, because, even at its loveliest, the imagery isn't expressive. The effects don't have any emotional meaning in terms of the characters, and so they don't mean anything to us, either. When people are frolicking in the street, people in the audience are whispering that it's a Dr Pepper commercial. Coppola has found a way to shrivel movie magic. "One from the Heart" is like a visualization of Warhol's "Everything is pretty."

Looking pale-eyed, Frederic Forrest is onscreen too much for the little he's given to do, such as a half grin of dumb pleasure when Frannie talks about how when they met she didn't expect to like him. Mostly, Hank mopes, and chases after Frannie, calling her name plaintively. And in the sequence in which he demonstrates his love for her by singing a song "from the heart" he's so maudlin you'd think it would confirm her in her decision to split. Forrest has been lighted by the cinematographer, Vittorio Storaro, who also shot "Last Tango in Paris," as if he were Brando in that picture. At home, with part of his face in the shadow, he looks like a serious, deeply exhausted man—a Roman emperor in his last days—until he opens his mouth and talks like a sheepish dumb slob. Teri Garr is nippy and speedier. From her first movie roles, she has seemed to be a likable funnyface—a cartoon of herself; she's certainly not like anybody else. She's so slender here that she seems weightless, and she wears perhaps the wispiest wardrobe ever assembled for a movie heroine—she's always slipping in and out of her teddies or some other bit of gossamer, and when she dresses up for conquest she puts on a sleeveless, practically dressless red dress and spike heels. Dancing a brief tango with Raul Julia, she puts her spikes down very firmly, like a confident, hot pony. But she's spiritually weightless, too, and Hank's suffering when he loses her seems overscaled. The people in this movie are charming but not interesting.

Nastassia Kinski seems intended to be the spirit of something—of Vegas, perhaps, or of romance itself. (I would love to have a tape of Coppola explaining the role to her.) She's not only a Vegas showgirl; she's also a Fellini-esque circus girl—an acrobat. Her scenes are the least enjoyable (because she has no personality), but they're not painful, because she is very diffident and very lovely—a sad young vamp, slightly worn. The childlike dewiness that carried her through other roles is gone; Coppola has put a veneer of lacquer on her, and she smiles her big, empty smile as if she were visiting from another planet. She poses and cavorts on the hood of Hank's car and walks a high wire in his—yes—magical junk yard (which recalls Syberberg's set in "Our Hitler"). Her dialogue is flossy babble in which this junk yard reminds her of the Taj Mahal, but her blasé innocence protects her—flat-voiced, she seems to be saying lines that she learned without finding out what they meant.

The sets and the story suggest that we're going to see a musical, and that is how the film was described in advance publicity, but the nearest it comes is in its allusions to "Saturday Night Fever" and "Flying Down to Rio" and other musicals. There are no singers or dancers in the cast. I think that Coppola thinks it's a musical—or, at least, a "musical play" or a "fable with music," as he has also called it—because of the way the scenes slide into each other. It could be popular with kids who grow up addicted to video games, and they could use it to get high on, the way others have used "Fantasia." But, except for the grace of the images and the amusing edge to the acting, it's like "South Pacific" without the music, and Coppola must have felt that this didn't quite do the job. Hence the song track, which, like the narration in "Apocalypse Now," seems designed to plug up the holes. The bellyaching songs (Waits wrote them) become as draggy as Richard Baskin's songs in "Welcome to L.A." And when you can understand the lyrics, that's when it's worst.

The set does have a wonderful grandiloquence, like a child's vision of a world's fair of the past, or something from one of those static English fantasies, such as "Stairway to Heaven." But Coppola hasn't figured out what to do with it—maybe because there's no particular reason (except the metaphorical one) for the story to be set in Vegas. The original script, by Armyan Bernstein, was set in Chicago, and when Coppola rewrote it he didn't do anything to tie the characters in to the changed locale. There's nothing under the tutti-frutti sweetness of the surface (except, perhaps, boredom and impatience). If the movie is slight and evanescent, it's because Coppola has begun to think of art as inven-



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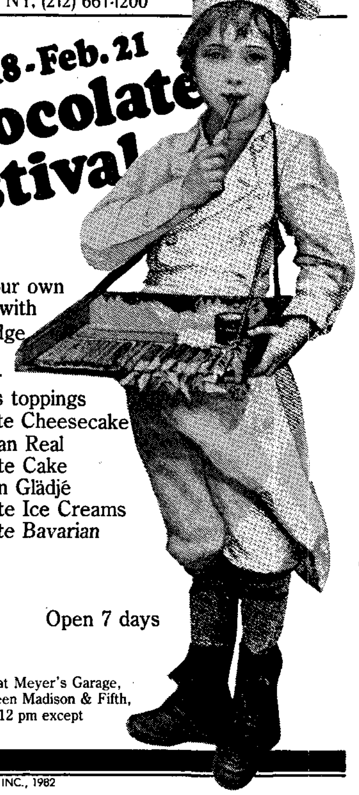

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tion—he has begun to think like Edison, or Preston Tucker, the automotive-design genius whom he frequently talks about. The climax of the film comes, really, in the end title that proclaims "Filmed entirely on the stages of Zoetrope Studios." Coppola has become so entranced by technical feats that he no longer thinks like a writer or a director. A man who can say, with the seriousness of a hypnotist, that new movie technology is "going to make the Industrial Revolution look like a small, out-of-town tryout" seems to have lost the sense of proportion that's needed for shaping a movie. The artist has been consumed by the technology. T. S. Eliot's "I can connect nothing with nothing" has become a boast.

JACK NICHOLSON may still have plenty of surprises in him. In the unheralded "The Border," filmed largely on location in El Paso, Texas, by Tony Richardson, Nicholson plays a United States border patrolman whose job it is to shove Mexicans back to their side of the Rio Grande, and he gives a modulated, controlled performance, without any cutting up. Except for his brief appearance in "Reds," this is the first real job of acting that he has done in years. The film also marks a change in the work of Tony Richardson: he has a major, muckraking subject, and he works to serve the material. Over the years, he has developed a considerable body of skills, and this may be the most unobtrusively intelligent directing he has ever done for the screen. It's a solid, impressive movie.

Charlie, the patrolman, hates his work; it fills him with disgust, because most of the patrolmen are in cahoots with the American businesses that hire wetbacks, and the patrolmen make their money—their big money—by closing their eyes to vans full of workers earmarked for their business partners. It's an ugly, corrupt life—persecuting enough Mexicans to keep the government bureaus happy while functioning as slave dealers. The trade sickens Charlie, but he gets caught up in it by the social-climbing idiocies of his wife, played by Valerie Perrine. When he was an Immigration investigator in the Los Angeles area, he had felt worthless and wanted to return to the Forest Service. But his wife talked him into transferring to the Border Patrol in Texas, because she had friends there, and now she and the wives of the other slave dealers belong to a Southwestern parody of upper-middle-class society: they shop for tight, bright clothes and decorate their gaudy dream houses, and the men wear expensive boots and cowboy hats and slap each other's backs at the barbecue parties held on the patios near the swimming pools. Charlie doesn't have the stomach for this camaraderie. If the loaded vans are discovered by any stray honest patrolmen, Charlie's pals may protect themselves by jailing the passengers or getting them killed.

Back in 1933, the picture "I Cover the Waterfront" caused a great stir by showing that when the captain of a ship smuggling Chinese illegals into California ports spotted a Coast Guard vessel heading toward him, he sank his human cargo—chained to go down swiftly. With any luck, "The Border" will cause a fuss, too, because it lays out—very graphically—the essential irrationality of government policies, and the cruelty that develops out of them. Working from a script by Deric Washburn, Walon Green, and David Freeman, and with the cinematographers Ric Waite and Vilmos Zsigmond, Richardson is able to encompass so much in the wide-screen frame that he shows how the whole corrupt mess works.

Charlie is a little like the hero of Kurosawa's "Ikiru," who knew that he couldn't do anything big to fight the bureaucracy but was determined to have one small accomplishment to leave behind. Charlie is so wasted and fed up that he tries to do one simple, decent thing—he wants to feel good about something. Among the Mexicans living in an encampment on their side of the Rio Grande and waiting to make the trip over, he spots a round-faced young madonna, who has come from a village devastated by an earthquake. Played by Elpidia Carrillo, a twenty-year-old Mexican actress who suggests a dark, adolescent Ingrid Bergman, she is clear-eyed and natural—the image of everything unspoiled, and the opposite of Charlie's giggly sexpot wife. She has a beautiful, plump babe in arms and is accompanied by her younger brother. Later, she's in a group Charlie has to round up and arrest, and when she's in the prison camp her baby is stolen from her by thieves (working in collusion with the slave dealers) who arrange for infants to be sold to childless couples. Charlie tries to help her and her brother make it over the border safely in one of the vans, but things go horribly wrong, and she is injured and the boy is shot. Charlie can't help the wounded boy, who dies, but he's determined to restore the girl's baby to her. That's all he hopes to do. He has no designs on the girl; she represents an ideal of what people can be if they're not corrupted, and his belief in that ideal is about all he has left. It gets to the point where the only thing that can give his life any meaning is to reunite the girl and her infant. In order to do it, he has to fight his buddy in the Border Patrol (played by Harvey Keitel) and the boss of the unit (Warren Oates) and he goes through hell.

Tony Richardson handles the large cast with apparent ease. Keitel is subdued and believable. Valerie Perrine, who has been giving disgraceful performances for several years, plays the dumb-tart wife to whiny perfection. And Shannon Wilcox, who plays Keitel's wife, a more confident tart, has a lifetime of teasing in her big smiles and swinging walk. There are also some very scary thugs headed by Jeff Morris.

Nicholson does his damnedest to make this muckraking melodrama work. (Luckily, or maybe through shrewd calculation, he wears dark glasses in much of the picture, so we can't see if he's doing his trademark stunts with his eyeballs.) Charlie is at the center of the story: the corrupted, conscience-ridden, self-hating American wishing he could feel clean again. Maybe Nicholson hasn't yet regained the confidence or zest to be exciting (while staying in character) that he had in, say, "The Last Detail," where he used his crazy-smart complicity with the audience. But probably that zest would work against the conception of Charlie, who has to be spiritually beat out. The movie might have been disastrous if anyone else had played the part. Nicholson is completely convincing as a man who has been living in dung up to his ears, and so when Charlie feels he has to do something decent before it covers his head, there's nothing sentimental about his need. It's instinctive—like a booze-soaked man's need for a drink of water.

—PAULINE KAEL

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[From the Lincoln (Neb.) Star]

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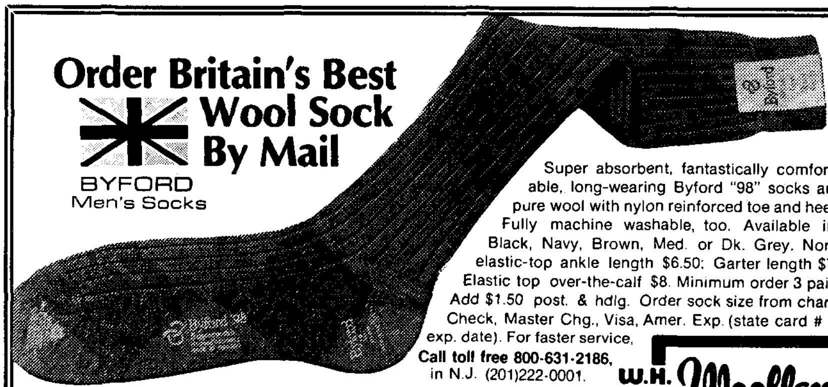

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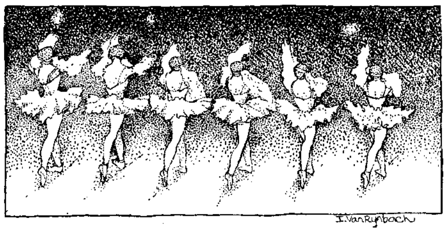
DANCING

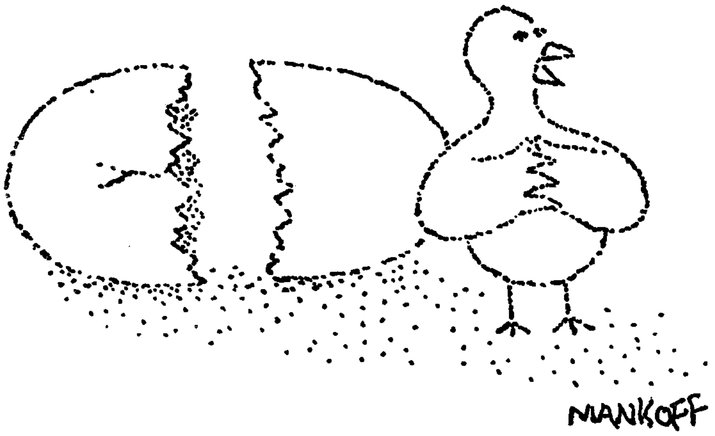
Starting Over

Dance Theatre of Harlem and Pilobolus are, in their different ways, unique companies; they risk losing more than just strength when their dancers are lured away by other companies or by new ventures—they risk losing profile. Dance Theatre of Harlem has reconstituted itself several times since its establishment, in 1970, by Arthur Mitchell and Karel Shook, and it keeps on having to replace key dancers. Just recently, it lost Mel Tomlinson to New York City Ballet, and that was on top of Ronald Perry's transfer to American Ballet Theatre and Lydia Abarca's defection to "Dancin'" and Hinton Battle's to "Sophisticated Ladies." Add to this talent drain the fact that the company has no house choreographer apart from Mitchell and you *should* have, in D.T.H., a dancing identity crisis. In reality, you have a formidable institution, organized not around personnel but around clear-cut aesthetic goals. The current season, at the City Center, shows a self-possessed company in confident pursuit of those goals. Whatever else it may have lost, its school has endured test after test, and its ambition is alive. The Pilobolus "school," an informal and far more precarious affair, is just now entering the critical stage of its first testing period. At the ANTA Theatre, in an engagement that ended last month, we saw the founders ceding their roles to the next generation, proving that a Pilobolus II exists. But this was very much a transitional season. The new members of the company haven't yet created their place in it. The bright new group piece, "Day Two," is their biggest contribution so far, but perhaps a few solos or duets need to be made before "Day Two" becomes in fact the dawn of a new day for Pilobolus.

Through all its trials and vicissitudes, Dance Theatre of Harlem has stayed a classical company—one that has defined itself more and more distinctively in the tradition of Russian and Russian-derived classicism from early Diaghilev to middle Balanchine. If there is such a style as Afro-Russian, D.T.H. has it; it has had it most conspicuously and enjoyably in "Le Corsaire" and "Paquita," in last year's revival of "Scheherazade" and this year's production of "Firebird," and in such Balanchine ballets as "Agon" and "Bugaku," where figurative or fantastic elements transfigure the classical line of the choreography. Wherever the classical line is relatively straight (as in "Concerto Barocco" or "The Four Temperaments"), the dancing is relatively stiff. The Harlem dancers bring a special élan to the hybrid classicism that the Russians used to refer to as demi-caractère. The Spanish Petipa of "Paquita" has become an ensemble showcase. (In earlier years, their Soviet Petipa had the same kind of élan, but that memorable "Corsaire" showed off only two dancers.) It makes one re-ponder—indeed, it makes one relocate—the "usable past" that is available to dancers. In the fun it gets out of dancing these old pieces, D.T.H. confirms its link with tradition and claims its share of a legacy. Our other major black-dominated company, Alvin Ailey American Dance Theatre, used to produce a series called "Roots of the American Dance." The Ailey's connections with those roots grow more tenuous with each passing season. Although Ailey's dance background is much the same as Geoffrey Holder's and Carmen de Lavallade's, it is D.T.H. that puts on the distinguished revivals of the Holder-Lavallade ballets. This season, Virginia Johnson is doing an old de Lavallade solo, "Songs of the Auvergne." She dances in stocking feet, a trifle uncomfortably, I would imagine, but her technique is more than credible. The Ailey was formed in 1958. Then it may have stood on firm native ground; these days it wades through slush. Ailey's latest ballet, "Landscape," is one of his periodic hopeful returns to old-school expressionistic modern dance. The choreography shows good form, but the dancers take no pleasure in it; for them "Landscape" is a routine assignment, the zillionth rerun of Ailey's pet patterns. They can't conceal the inanition of expressionistic design; all they can do is punch up the show. The "Paquita" staged for D.T.H. by Alexandra Danilova represents her memory of the Petipa she learned as a girl during the period of Petipa's near-cancellation by Fokine. Structurally, the ballet is still a marvel, but its choreographic details are sparse, especially in allegro. Danilova's "Paquita" is like a handsome Spanish shawl, an heirloom all the more cherishable because it is threadbare. The Harlem dancers can't fill out the bare places, but they do supply a kind of suggestive power; watching them, you see the underlying vitality of the conventions. When you watch "Landscape," you see only conventions.



And you see only conventions when you watch Valerie Bettis's "A Streetcar Named Desire." The Bettis piece, done originally in 1952 for a company headed by Mia Slavenska and Frederic Franklin, was revived this season by D.T.H., although its histrionic movement idiom, solemn and slick at the same time, is really as unrevivable as the more decorous expressionistic idiom the Ailey company keeps trying to work in. In "Streetcar," based on the Tennessee Williams play, the forms that possibly were once signposts of emotion are blank. This makes the ballet doubly inarticulate: deprived not only of Williams' dialogue but also of an expressive vein of movement. And since Bettis sticks close to the Williams scenario and cast of characters, and uses the music that Alex North wrote for the movie, we are constantly being reminded of the things that aren't being portrayed. We don't know why Blanche DuBois (Virginia Johnson) is so nervous or what her affectations stem from or why she gets under Stanley Kowalski's skin. Stanley (Lowell Smith) rapes her in a fit of irritation, and it is a trivial conquest. Blanche is not a threat to him in what she represents; her world and his are concepts that Bettis never succeeds in clarifying, for all her picture hats and bare light bulbs and louvered doors. Yet Bettis has made a discovery of sorts. When you switch off the soundtrack of "Streetcar" and strip the drama of its particulars, it turns into something very like Antony Tudor's "Pillar of Fire." At the end, Blanche even exits behind the scenery, trailing off into the forever on the arm of her attendant, like Hagar on the arm of her lover. If Bettis had forced the resemblance even further than she already has with her gauzy Tudoresque dream figures—if she could have made dances and gestures through which Hagar-Blanche expressed her-



"And for my next act I will escape from a galvanized-iron can filled with water and secured by massive locks."

• •

self and her situation—we might have had a second-rate "Pillar," but at least we'd have had a ballet, and not a series of scenes in which the heroine *isn't* saying "Young, young, young man" or "Stella for star!" or "I have always depended on the kindness of strangers."

The new "Firebird" is splendidly done. Geoffrey Holder has placed the action in a Rousseau tropical forest heavy with night-blooming flowers. His Firebird is a red comet against the sky; his Princess and his Maidens are orchidaceous in draped chiffon and streamers. The 1945 suite of dances is staged by John Taras much as Balanchine staged it in 1949, in a style both innocent and suave; there is a salute to Balanchine in the long tremolo exit of the ballerina as, back bent and wings spread, she flutters off on her points into the dark. Elsewhere, the fluid and resourceful steps are Taras's own. The Maidens' round dance reminded me of his Russian bloodlines; the Firebird's solos recalled that he was once ballet master at the Paris Opéra. With its leggy plastique, its preenings and flouncings, the role can only be described as Josephine Baker Petipa, and it is actively enhanced by a lavish plumed headdress and a red-feathered leotard cut high on the hipbones and ending in a fantail ruff. Stephanie Dabney looks great in this costume of Holder's, and she bends and plummets and skims the ground with amazing tensility. An eager performer, Dabney sometimes anticipates her cues and acts too much with her face. But she has speed and softness, and when she trusts herself to be even softer she will give an even finer performance. This production of "Firebird" tries, not very seriously, to separate the ballet from Russian mythology. The Tsarevich (Donald Williams) is called Young Man and is dressed like an intruder from outer space. The Princess is called Princess of Unreal Beauty. Danced in trailing blue chiffon by the five-foot-ten-inch Lorraine Graves, she is all of that. The monsters suggest demons out of Haitian folklore. Kostchei (here Prince of Evil), in a dark polka-dotted dress, alone of the principals makes no impact.

Holder—it has been a Geoffrey Holder season—also revived his "Banda," a Haitian funeral scene in which vestiges of Catholicism are mixed with voodoo ritual in a swirl of incense and crinoline. The costumes are not the whole show. There is the Dracula-like ghoul Baron Samedi, a hip-rolling lascivious role that once belonged to Holder himself. Donald Williams—the decorative hero of "Firebird," the placid Mitch of "Streetcar"—dances with a precision that is truly fiendish.

ONE of the most memorable performing ensembles of the seventies, Pilobolus gained its greatest fame as a sextet—four men and two women—whose harmony lay in exquisitely balanced dissonances. The basic unit was a male quartet, and here, too, dissonances were resolved. Jamey Hampton in Moses Pendleton's roles, Robert Faust in Jonathan Wolken's, and Peter Pucci in Robby Barnett's have been good, but they haven't set up a tetrachord with Michael Tracy, who remains for the most part in his old roles. Pucci and Tracy are at the moment too much alike, physically and temperamentally; they're small, light, and winsome. Hampton is properly gnomic, and so is Faust, but Faust is also a giant—so large he looks out of scale with the others. And there's nothing happening between the men and the women—Carol Parker and Cynthia Quinn, who do the Alison Chase-Martha Clarke roles.

Of course, it is unfair to judge the newcomers in terms they themselves have not set, even though that is exactly what the ANTA performances invited us to do, particularly in the signature group pieces "Monkshood's Farewell" and "Untitled," and in specialties like "Momix" and "Geode," which are self-portraits of Pendleton and Barnett. The new people could not quite cast off the shadow of their predecessors; neither were they always free to reinterpret. When they did reinterpret, they were disappointing, with a tendency to broaden and coarsen effects or simply to miss them. In some pieces, the exaggerations must have been irresistible. "Molly's Not Dead," a country-and-Western number, has a built-in tendency to self-inflate. "Walklyndon," the oldest item in the repertory, is unmitigated slapstick. But I was startled to see in "Shizen" italicizations that sprang from nothing in the piece and that did it some disservice. "Shizen," a duet created by Pendleton and Chase, is quiet, unemphatic, imperturbable; it has always been an audience-resistant piece, the opposite of "Walklyndon" and "Molly's Not Dead." Hampton and Quinn—too conscious, perhaps, of not being Pendleton and Chase—chose to emphasize moments. They didn't need to, nor did they need the big orange spotlight that was thrown on those moments as if to say "This is famous." (The lighting of Neil Peter Jampolis throughout the season was otherwise admirable.) Pilobolus charms audiences as a matter of course; few companies have that kind of magic, and few must be as mindful of the difference between eliciting approval and soliciting it. At the same time, Pilobolus is show biz, and it knows that, too. Among the many awesome balances the older generation used to strike was the balance between high and low taste. They had an infallible instinct, too, when it came to holding the audience within the bounds of that agreement. Pilobolus II, in the working out of its own Pilobolian vision, may find that its greatest challenge is the audience.

—ARLENE CROCE

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To be holding a risky security in a bull market is an awful predicament. The last Westbrook Pegler described it in another context. It's raining soup, he wrote, and the Republicans are outside with forks.

—Barron's.

Last but not *least* Westbrook Pegler.

MUSICAL EVENTS

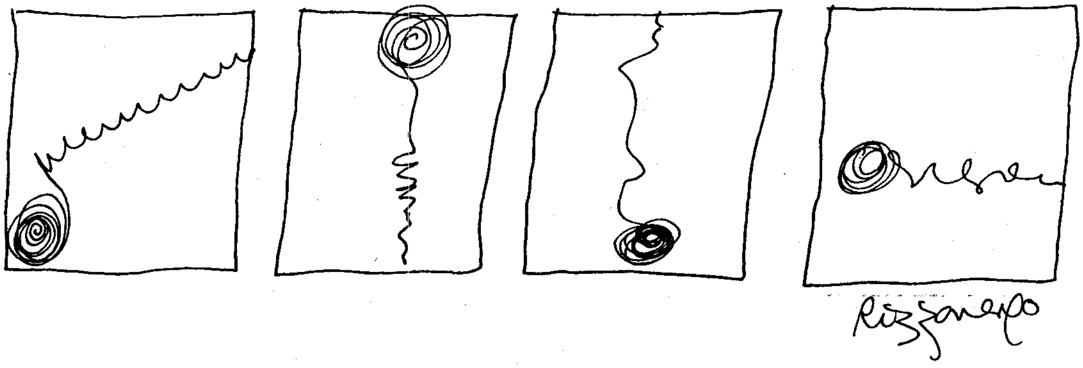
Close to Home

THE Philharmonic made a good choice of American premières in the early part of the season: Stockhausen's "Jubilee" and Henze's "Barcarola" were short, substantial works, and Britten's "Young Apollo" was a welcome novelty. Samuel Barber's new movement for oboe and orchestra, played in December, was a fragment from a concerto planned before the composer's death. The first full new work of the season was introduced two weeks ago: George Walker's Concerto for Cello and Orchestra is one of the current series of commissions for the leading players of the Philharmonic, funded by a gift from Francis Goelet. The orchestra has previously played three pieces by Mr. Walker, who lives in New Jersey. In September, 1977, his Piano Concerto and "Lyric for Strings" were included in a Celebration of Black Composers; last season, "In Praise of Folly" was given a first performance. Such continuing support of a local composer is admirable, but I wonder if in this instance the Philharmonic has not looked too close to home for a commission. The new concerto is a difficult work to like, because there is so little in its vast, active, sprawling mass of noise on which the listener can focus. The solo cello part, played with great dedication by Lorne Munroe, defies analysis; the racing, strenuous passagework often takes the instrument into its highest register in a confusing chromatic idiom. The orchestral contributions are designed on the largest scale; texturally, they might make an impressive contribution to a symphony, but Mr. Walker has not taken the hint from Dvořák, Schumann, and Elgar that a concerto for cello requires particular restraint in orchestration. The soloist is usually audible (for all the difference that makes), because Mr. Walker reduces the accompanying forces at almost every solo entry, but the result is that the sections for full orchestra and those for the soloist do not sound as if they belonged in the same piece. They do share musical material. There is an unrelenting emphasis on those two great standby intervals of contemporary composers the minor second and the major seventh. Strong dissonances abound, therefore; the brass instruments shriek them in strident syncopations, and the cello winds its way round them.

The concerto is conceived as a reworking of conventional concerto form, with three movements ("Risoluto," "Doloroso," "Fuocoso"); there are elements of sonata form in the first and of rondo form in the last. The central movement starts with an attractive melody, passed from oboe to clarinet to flute. But in all three movements the composer seems uncertain of his harmonic and melodic direction, and the resolution of each movement is forced. In the first, isolated harpsichord chords suddenly introduce a new sonority just a few bars before the end; the second subsides into static chords; the third changes course completely and introduces a lyrical theme on horns (a lovely sound, one that complements the cello well). In the final bars, a delicate whoosh of flute and cello scales is firmly stamped on by a tutti chord. Throughout the fast movements, there are tiny bits of figuration floating around the orchestra, to little purpose. Although the work is not easy to play, the Philharmonic did excellently; how Mr. Munroe mastered the ramblings of the solo part I cannot imagine. Zubin Mehta conducted, impassively. The concerto was preceded by Mozart's G-Minor Symphony, K. 183, which, though it is little (in popular nomenclature), should be fiercer than it was here.

Mr. Walker's concerto is at least a real piece of music. The other new work that I heard on Martin Luther King's birthday, Undine Smith Moore's "Scenes from the Life of a Martyr" (dedicated to King's memory), at Carnegie Hall, was more in the nature of a declaration of political hope; it was decked out with eclectic musical trappings but was dominated by its spoken narration, which William Warfield delivered. The Collegiate Chorale, under Robert Bass, performed with evident commitment and with fine ensemble; an outstanding quartet of soloists—Esther Hinds, Isola Jones, Vinson Cole, Arthur Woodley—made the most of the flimsy material.

DURING the last decade, Clarion Concerts, under the direction of Newell Jenkins, has presented the American premières of three operas by Agostino Steffani, the Italian composer and diplomat who spent most of his working life in northern Germany. It was appropriate that a fourth opera should be included in Clarion's twenty-fifth-anniversary season, at Alice Tully Hall. It would be a greater acknowledgment of Clarion's remarkable achievement for some small opera company that is well versed in Baroque opera to take up these effective and not overdemanding pieces. "Amor Vien dal Destino" (to use the most portentous of the three titles under which the opera has been handed down) was composed in Hanover in 1694, and sounds like a chamber opera. Its distinctive texture is that of a voice and an obbligato instrument duetting on equal terms over a continuo bass. The writing for strings does not demand a large ensemble. Steffani introduces a wide range of instrumental color but confines it to carefully chosen parts of the score. A solo lute accompanies one aria and part of the recitative. Martial effects are achieved in one of Jupiter's arias by the combination of solo violin and oboe with strings. The most lavish ensemble appears only



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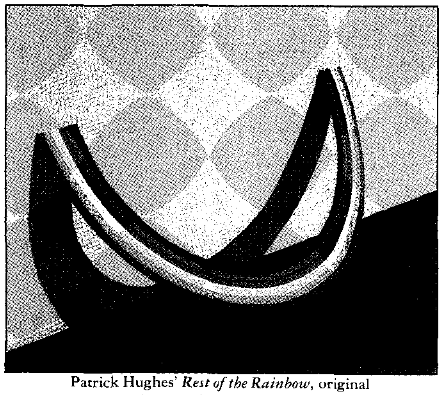

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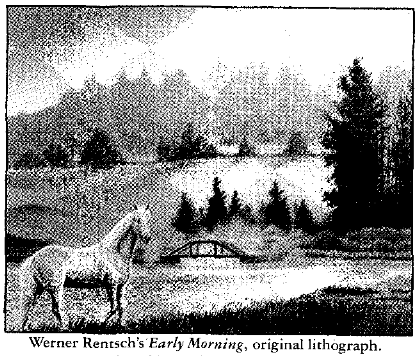

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once, at the start of the third act, in a supernatural scene that takes place in a grotto. Steffani introduces four chalumeaux (clarinets were used here), bassoon, and two theorbos—which in a staged performance would be placed separately, the chalumeaux behind the scene, the bassoon offstage at one side, the theorbos in the pit. (This use of wind instruments is reminiscent of Monteverdi's description, in a letter to Alessandro Striggio, of effects planned for his lost opera "Le Nozze di Tetide.") Mr. Jenkins emphasized the intimate feel of the opera and its links with the idiom of the early Baroque by including a harp among the continuo instruments and by using viola da gamba and lutes to accompany some of the voices; too often, though, the plucked instruments were inaudible. The opera has many prefigurings of Handel (a startling premonition of Handel's duet "No, di voi non vuo fidarmi," on which he based the chorus "For unto us a child is born" in "Messiah," is offered in the duet "Se tu parti"), yet it rarely aspires to Handelian grandeur. There is much to remind the listener that Steffani knew early French as well as early Italian opera. A striking feature of Steffani's music both in aria and in recitative is a fairly plain melodic line that is suddenly broken at its climax by a florid melisma. (Da capos were well ornamented in this performance, but melodies were left excessively plain the first time through.)

"Amor Vien dal Destino" tells of Aeneas' fate after leaving Dido, his eventual marriage to Lavinia, and the marriage of Lavinia's younger sister Giuturna to Turnus, King of the Rutolians. A continuous story can be constructed from the first part of Cavalli's "Didone" (if that opera's contrived happy ending is ignored), the whole of Purcell's "Dido and Aeneas," and this Steffani opera. The libretto, by Ortensio Mauro, is a fine one, and its themes of love and fate are subtly developed. (I am rather relieved that it escaped analysis in Robert Donington's stimulating new book "The Rise of Opera," published by Scribners, which imputes an extraordinary wealth of Neoplatonic, Jungian, and other elemental preoccupations to the librettists of seventeenth-century operas.) Yet Steffani's piece requires staging to clarify its complexities. Mr. Jenkins said as much when he introduced this concert performance, but he then compounded the confusion with a jokey run-through of the mixed-up sexes and disguises of the characters. On the whole, the opera was well cast. Jon Garrison was a clear but unimaginative Aeneas. Elaine Bonazzi was an expressive, rather fruity Lavinia, who tended to dally in recitative. Turnus has most of the finest music; his part was splendidly sung by Bernadette Greevy (who recovered from some confusion in "Che possa il mio core" with remarkable ease). The most stylish, flexible singing came from D'Anna Fortunato as Giuturna and, earlier, as Giove. Among the smaller parts, Elizabeth Pruett was a bright, loud Coralto and Venus; Douglas Perry and Raymond Murcell provided nicely inflected comic relief. Mr. Jenkins directed firmly, and his orchestra played solidly. But there was a lack of pace and drama in the evening, owing mainly to the sluggish performance of the recitative. To hear how Baroque recitative can move lightly yet dramatically, listen to the recording of Handel's "Partenope" directed by Sigiswald Kuijken (Harmonia Mundi of Germany). Some of Steffani's chamber duets—perhaps his most distinctive contribution to musical history—have now been recorded by Concerto Vocale (Harmonia Mundi of France).

CLAUDIO ARRAU's recent Carnegie Hall recital of music by Beethoven and Liszt was acclaimed by a full house, but it was one of those occasions when, with Charles Ives, a critic has to ask himself, "Are my ears on wrong?" The evening left me cold; though there was something to admire in the pianistic control with which Mr. Arrau sang the melodies of Beethoven's "Appassionata" and "Les Adieux" Sonatas and the Liszt B-Minor Sonata, even the technical aspects of the playing left much to be desired. The bass register in the Beethoven sonatas was consistently muddy and ill-defined; the chording and passagework in the Liszt were splashy and uneven. Underneath, the interpretations seemed hollow. In "Les Adieux," the concentrated reduction of the opening theme in the first movement should create unbearable tension; the first chord of the slow movement should be startling; the finale should have a sense of controlled exultation. (All these things happen in, for example, the Alfred Brendel performance, taken from his complete recording of the sonatas, which has been released by Philips on a single disc.) In the "Appassionata," Mr. Arrau made much of the virtuosity but little of the plan of the work: the uncertain pedal note over which the first movement's recapitulation starts did not register; the astounding coda did not surprise. The Liszt sonata reached its climaxes too early, and ran out of steam; the Fantasia "Après une Lecture de Dante" was so unclearly played as to be unintelligible. Perhaps Mr. Arrau was having a bad day; his most recent recordings, of Schubert sonatas and Liszt concertos (Philips), are more sophisticated, though still not much to my taste.

CAPRICORN, an ensemble of musicians and dancers in residence at St. Peter's Church in the Citicorp Center, gave a concert there last week that included two recent British chamber works. The evening's main première was the lively, oddball Sonata for Cello, Piano, Percussion, and Seven Wind Instruments, by the British composer Tim Souster. The sonata, which was influenced by Manhattan jazz and California landscapes, was written in this country when Mr. Souster held a Bicentennial Arts Fellowship, in 1978-79, and was performed in England in 1980 and repeated at last year's Promenade Concerts. Capricorn gave the New York première of "Anakreontika," by Peter Maxwell Davies, a terse and pungent group of settings of Greek verse, which dates from 1976; it was played rather uneasily under Meir Minsky's direction, and was sung by Lisa Nappi, a cool, delicate soprano. But before that we had to endure three unprepossessing pieces, two of them danced.

THE Boston Symphony Orchestra has taken up Sir Michael Tippett's Triple Concerto, and brought it to New York last month, under the direction of Sir Colin Davis, who had conducted the London première, in 1980. I heard that première, but not the North American performances by the Toronto, Pittsburgh, and San Francisco orchestras, which followed rapidly. Suffice it to say that the Boston performance was superb: passionate, rhapsodic, warm, well defined, with a breathtaking account of the solo violin part from György Pauk and fine solo viola and cello playing from Nobuko Imai and Ralph Kirshbaum. For me, the work is unquestionably a masterpiece. But then I'm English; the music is close to home.

—NICHOLAS KENYON

BOOKS

Medieval Voices

AT the beginning of the fourteenth century, the Inquisition set out to crush the Albigensian, or Cathar, heresy in one of its last resorts, the tiny mountain village of Montaillou, on the French side of the Pyrenees, in what is now the Department of Ariège. In medieval times, the region was an independent principality ruled by the Comtes de Foix. A verbatim report of the proceedings of the Inquisition lies in the Vatican Library and had long been known to historians, who apparently regarded it as worthy of not much more than a footnote in their studies. History has traditionally been concerned with great persons and central political situations, but in recent years a number of French historians associated with the journal *Annales* have taken another view. They have turned from public life to the intimate and natural life of people caught as they live through events: to the daily habits, the superstitions and beliefs of anonymous men and women. The Inquisitor's report on Montaillou turned out, quite unintentionally, to be a mine rich with the everyday habits of an isolated group of peasants given idealistically to human error. Emmanuel Le Roy Ladurie, a fine and original historian—well known for his "The Peasants of Languedoc"—saw the peculiar value of the document, and although one might think an exhaustive study of Pyrenean peasant life in the fourteenth century to be outside the common interest, his "Montaillou: The Promised Land of Error" was a best-seller in France. The English translation, by Barbara Bray, is an abridgment of the French, but it is well done and irresistible (Braziller; $20).

M. Le Roy Ladurie conveys his wide and searching scholarship in a graceful, clear, and witty prose. His intelligence sparkles. One reason for the book's success is overwhelming: the Inquisitor's verbatim report enabled the author to give us what history so rarely can—the real voices and phraseology of a people lost for hundreds of years. We hear them talk of their village, crops, families, animals; their attitude to love, sex, marriage, death; their superstitions; their friends and enemies; their religious speculations. One is listening to an artless, sometimes sturdy, sometimes cunning confession. The whole might be the puzzled confession of a culture and an age. It was winkled out of them by the sly Inquisitor Jacques Fournier, Bishop of Pamiers, later Pope Benedict XII, who might almost be called the hostile co-author of Le Roy Ladurie's book. Fournier, we are told, was the "very devil of an Inquisitor"—a remorseless psychologist and deadly theologian, a terrible sifter of souls. No detail of his victims' lives was too small for his attention. Had he not been a theologian, he might have been a novelist collecting his material. He also resembles the contemporary commissar, depending on spies and informers, and determined to destroy heterodox Error. Although Fournier was rarely a torturer, he had the sadistic pleasure of sending his victims to the stake or to be fettered in prison, where they were forgotten, and of sending the minor sinners to homeless ruin and the wearing of a yellow cross as a penalty for heresy.

It is not necessary for Le Roy Ladurie to go deeply into the Cathar heresy except insofar as it reveals the daily life of Montaillou, which became its last refuge; over the passes, the fugitives could get to the relative tolerance of Catalonia and the Mediterranean. The heresy was Christian and appeared originally in Languedoc, northern Italy, and the Balkans. In an eccentric form it foreshadowed the great Protestant revolt in Europe two centuries later. Catharism is evidence of a slowly growing change of heart and mind among the common people. It accepted the Manichaean doctrine of two opposite principles: one of good, one of evil—light and darkness, the spiritual and the carnal. God and Satan were equal or nearly equal gods. Cathar belief distinguished between believers, or *credentes*, and an élite of personal righteousness—the *parfaits*, or *bonshommes*. The *parfaits* were commonly said to be "hereticated"—an equivalent of "baptized." They had to refuse to eat meat or to unite with women. Conversion assured them of immortality in a peasant Heaven; they were missionaries and could bless bread. Baptism was by book, not by water. The cult was practiced without Church ritual, in the privacy of the home. At death, the *parfaits* entered into a state of ascetic *endura*, or suicidal fasting. Less austere believers had a more agreeable life. They profited by one of the paradoxes of dualism: when everything is forbidden, everything becomes allowed (as the "justified" sinners among Calvinists later discovered) until the last moments before death. Then ordinary believers might also become "hereticated," and would be assured of the consolations of forgiveness and immortality—in which reincarnation played an ingenious part. The soul became part of a multitude of spirits that fill the air or enter animals:

> When the spirits come out of a fleshy tunic that is a dead body [said Bélibaste, one of the villagers interrogated], they run very fast for they are fearful. They run so fast that if a spirit came out of a dead body in Valencia and had to go into another living body in the Comté de Foix, if it was raining hard, scarcely three drops of rain would touch it! Running like this, the terrified spirit hurls itself into the first hole it finds free! In other words into the womb of some animal which has just conceived an embryo not yet supplied with a soul; whether a bitch, a female rabbit or a mare. Or even in the womb of a woman.

Bad souls become devils, entering wolves, snakes, toads, flies, and all poisonous beasts, inedible or inimical to man.

The peasants were less hostile to religion than they were to increases in Church tithes, to the greed and worldliness of powerful priests, to taxes on humble foods such as cheese, beets, and turnips, and to the rising price of Indulgences. Official Christianity became a political ideology. The peasants, weavers, and shepherds of a remote mountain village like Montaillou may have been in fee to the Comte de Foix, but the village was almost classless. The small castle that stood above the community, which hung down the mountainside, one house above another, had its châtelain, but the nobles were almost indistinguishable from the rest of the people. One of the most compelling women in this book is Béatrice de

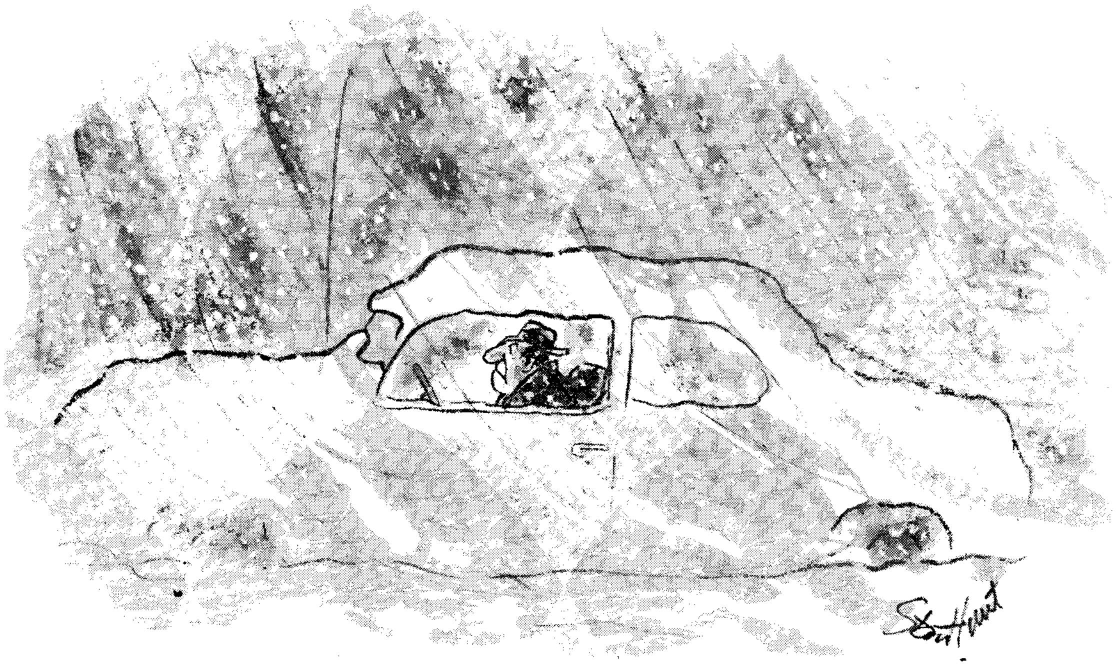
Planissoles, the châtelaine, who had had two "noble" husbands and also several village lovers outside her caste. She could pass for a primitive village woman, as dirty in body as everyone else was, though not in hands and face, and, like the others, she would sit by the hearth delousing her husbands, her lovers, and the assembled family. Delousing was a common social way of passing the time. Caste feeling was far slighter in the South of France than in the North, and in Montaillou poverty excluded it. The village had little dependence on the châtelain. The peasant did not feel inferior to the artisan, nor did the artisan feel inferior to the often ragged noble. The poverty was not wretched: the village lands were too cold for the vine, but there was wheat. The people lived on bread, smoked pork, the trout of the mountain streams, snails, and the squirrels in the forests. The familiar terraced plots of southern Europe grew enough. Money was scarcely used; barter replaced it. Domestic utensils being scarce, too, these were borrowed. To be free of temptation and spies, the *parfaits* lived a good deal in the forests, chopping timber, which the women carried home. There was a tailor who was a *parfait* and a cobbler who distinctly was not. It was a general rule in such villages that the cobblers and the priests were the Don Juans and contributed to the supply of bastards, who often became domestic servants. The rate of mortality was very high, especially among infants.

The moral center of the society was the *ostal*, or *domus*—or, as we would say, the hearth. A family was not simply the persons in it but the stone, wood, or daub that housed them and their beasts, and the energies that sustained them. To protect these energies in the future, the hair and the fingernails of the corpse were preserved when the head of a family died; these were known to grow after death and were kept to stop the dead taking away the vitality of the *domus*. Another danger to the *domus* was the loss of women by marriage: they took their dowry with them. The villagers therefore negotiated marriages with the care of auditors making a balance sheet. Some, including the priest, inclined to the daydream of incest between brothers and sisters as a guarantee, but the defense of the family introduced subtler rules; marriage between first cousins was prohibited. Outside of this, Catharism was permissive without being promiscuous. There was a distinction between what was shameful and what was sin. Raymond de l'Aire, a peasant—and a confessed atheist—said:

> To sleep with one's mother, sister or first cousin is not a sin, but it is shameful. On the other hand to sleep with second cousins and other women I do not consider a sin, nor a shameful act either and I hold firmly to this view because in Sabarthès there is a proverb which says "With a second cousin, give her the works."

The *parfaits* of Montaillou were revered as the "goodmen," the bearers of virtue in a primitively Christian faith. But not all the inhabitants were heretics, and the Inquisition turned the place into a web of spies and informers. In Fournier's report, three or four figures come vividly to life. First, the brothers Clergue. Bernard was the tax collector and bailiff of the Comte de Foix. Pierre was the priest. He is the complete exemplar of the man who runs a protection racket—the godfather, or spider at the center of a complex web. A short, frightening, blackmailing seducer of the women of his parish but a very able man, he was the son of a Cathar father, who detested him, and a Cathar mother, whom he adored. In his early years, he seemed to be a genuine heretic, but, intent on power, he soon became a double agent, and his brother coöperated with him. Bernard collected tithes and, to keep in with both sides, shared them between the Cathars and the orthodox Catholics. Neither brother saw himself as a renegade; rather, each saw himself as carrying out a justified vendetta against his family's enemies. Although the Clergues' evidence led many to be condemned, the Inquisition sent the brothers to death in prison when their dirty work was done.

Then, there is Béatrice de Planissoles. She would never consent to bear a child outside her own caste. She endured rape by the priest's cousin, a bastard, but does not seem to have been greatly distressed. Her love affairs were public; she was a sensual and passionate creature. Even the priest would not give her a child, for he recognized that he was lowborn and knew that she would be shamed. Yet he would sleep with her secretly, before the altar, on a



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bed brought into the church. He also practiced a form of birth control, using a package of herbs containing the rennet of a hare.

> One day, said Béatrice, I asked the priest: "Leave your herb with me." "No," he said, "I won't because then you could be united carnally with another man, and thanks to the herb, avoid becoming pregnant by him!" The priest said that out of jealousy of Pathau, his cousin, who had been my lover before him.

Although the strength of the *domus* lay, as everyone knew, in marriage, the interrelationships often made marriage difficult. Concubinage was acceptable, and distinctions were made about the nature of love. The daughter of a sheep farmer formed a temporary union with Arnaud Vital, the cobbler. She said:

> I was very fond of Arnaud, with whom I had established a dishonourable familiarity; he had instructed me in heresy; and I had promised him to go and see my mother to persuade her to agree that my young brother [he was very ill] should be hereticated.

Le Roy Ladurie notes that she did not think her life anything to hide or to be ashamed of—this was a real love affair, a matter of inclination. Arnaud remained on good terms with his mistress's mother. Many women thought carnal love no sin so long as one made love for pleasure. When pleasure ceased, it became sin. The Inquisitor unearthed the astonishing variety of influences, whether realistic, religious, or simply innocent, on human feeling. It was considered no sin to go with a prostitute so long as one paid: the payment absolved.

Le Roy Ladurie is not an anecdotalist. Every word spoken adds something to our knowledge of how the people lived and felt. He notes how the women married many years earlier than the men, who aged rapidly, so that if women had a hard life when they were young they survived much longer and came to formidable positions of power as mothers-in-law and grandmothers. He notes that the women were great gossips (dangerous in this period of religious persecution) but that there was no educational difference between the sexes—neither had any education. Discrimination did not appear until parish schools were introduced: these schools were attended only by boys. The women liked firing off questions to one another about their relatives, about childbirth, and, always, about who was or who was not a heretic. It was not until the coming of a more bourgeois civilization, with its concern for privacy, that this kind of watching, eavesdropping, and spying chatter decreased.

The most attractive human being among the enlightened families of the narrow *domus*-dominated village is Pierre Maury, the shepherd. The shepherds, who drove their flocks in the seasonal migrations across the Pyrenees into Catalonia, had the unsettled character of nomads. They were great bread eaters. They might stay in houses for a while or sleep in barns. They changed their masters often, preferred their freedom to money, rarely married, and scorned to accumulate goods. Pierre Maury was, it is true, once tricked into a marriage—which lasted three days—by a delinquent *parfait* whose mistress was pregnant. The *parfait* missionaries had a technique of preaching to the shepherds as they trudged on their journeys. Though Pierre Maury dabbled in heresy, he was soon bored and sly. He would lead the preacher up the steepest paths of the mountain, so that he was too short of breath to preach:

> But the shepherd and the goodmen used to stop for a pleasant, if not always very liturgical, snack on the journey: galantine of trout, meat, bread, wine and cheese. They had a Cathar good time, while the tentacles of the Inquisition had not yet extended to an altitude of 1,300 metres.

At one time, Pierre dared to rescue his sister from her husband, who was beating her. Pierre was a free man who did not bear malice for long. When ridiculed for being tricked by the *parfait* into the false marriage, he continued to be friends with the man who sponged on him:

> This unrequited friendship was not only the result of individual magnanimity. It belonged to a general background of Occitan [i.e., Provençal] culture and artificial relationships in which total brotherhood between friends unlinked by blood who shared everything equally without hesitation was institutionalized in the ritual forms of fraternity (*affrèrement*), recorded from the beginning of the fourteenth century.

An informer called Sicre—a man as repellent as Pierre Clergue, the priest—pretended to enjoy Pierre Maury's popularity and friendship; Maury was imprisoned by the Inquisitor. Maury was a happy fatalist. He believed in freedom, preferring a full network of human relations—casual women picked up in taverns—to a wife he could not, he said, "afford" (though he was often wealthy, in a haphazard way). He chose a life based on fate freely accepted. Le Roy Ladurie adds, "Is this not the very definition of Grace?" Pierre Maury had only one luxury—"a pair of good shoes of Spanish leather"—and he was careless of arrest by the Inquisition, "leading a life that was both passionate and passionately interesting."

Montaillou was concerned, as the author says at the end of this absorbing book, with the physical warmth of the hearth and the promise of the Albigensian peasant Heaven "one within the other." Now the terraced plots of such villages, as one can see everywhere in the mountains of southern Europe, are being abandoned. The stability of an ancient world has gone. Our own world's new peasantry is in the factories, and, unlike the people of Montaillou, belongs to a society of competitors and consumers.

—V. S. PRITCHETT

BRIEFLY NOTED

FICTION

HEADING WEST, by Doris Betts (Knopf; $13.50). An ambitious—perhaps overly ambitious—novel, yet a fine one. It is romantic but hard-bitten, violent but reflective, dense but well lighted, intellectual but humanized by a wry, drawling Southern humor. It is built, layer upon layer upon layer, on an account of a woman aimlessly kidnapped by an aimless drifter. Nancy Finch, the victim, thirty-four and unmarried, is a librarian in a small North Carolina town, who lives—discontented but full of spirit—with an arthritic, complaining mother and a sweet-natured but epileptic and somewhat retarded brother. She is abducted while on a dreary camping trip with her brainless younger sister, who has escaped from home by marrying a local clothier. Nancy and her abductor (a gloomy young man who goes by any number of names) head West: Tennessee, Arkansas, Texas, New Mexico, the Grand Canyon. Nancy's reaction to her situation is interestingly ambiguous and equivocal: there is a certain guilty exhilaration in the release from home, there is a natural fear and trembling; her attempts at escape are genuine but halfhearted, her revulsion to her abductor deepens and grows. Mrs. Betts knows and understands these responses, and it is her examination of them that gives her novel its strength, its intensity, and its ex-

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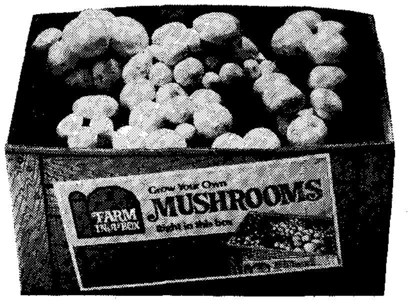

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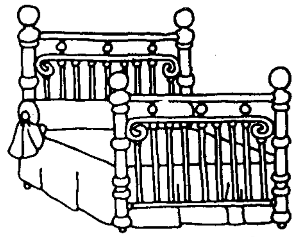

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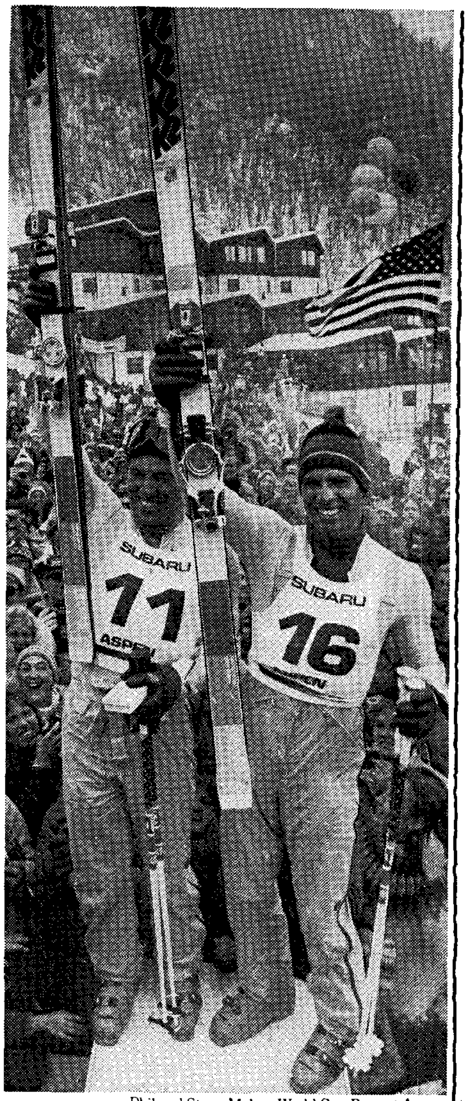
GENERAL

Letters to Ottla and the Family, by Franz Kafka, translated by Richard and Clara Winston and edited by N. N. Glatzer (Schocken; $15.95). The great barrel of Kafka letters is having its bottom scraped in this slim addendum to the massive "Letters to Friends, Family, and Editors" and to the letters to Felice Bauer and Milena Jesenská. Ottla was the youngest of Kafka's three sisters, and his favorite, a peaceful presence in his tormented landscape: "If everything in the world were to disturb me—and it has almost reached that point—not you." Intelligent and gentle, she shared her brother's vegetarianism and something of his saintliness; twenty years after Kafka's death, Ottla divorced her Christian husband for the sake of his safety and that of their daughters, and volunteered to accompany a transport of children to the death camp at Auschwitz, where she ultimately met her own death. While Franz was alive, she served him as confidante and as go-between as he negotiated, from a succession of mountain sanatoriums, with his family and his employer. The letters become more copious as his disease worsens, and reflect the grim comedy, also portrayed in Mann's "The Magic Mountain," of pre-antibiotic lung therapy—a touching concoction of fresh air, hearty food, and vain hope. Kafka's attitude toward his own wasting was fatalistic, and even welcoming: "It would be quite wrong for you . . . to see this development as having only the saddest consequences for me. It would much more be the other way. As things are and as they seem to be going, it is for the best and enters my life at the right point." His illness held out the hope of peace with "the enemy inside my head," the curious tumult of his hypersensitivity. "Yes, nothing is easy," he tells Ottla, "and even happiness, even true happiness—flash of lightning, beam of light, command from on high—is a terrible burden." Many of the communications are on postcards, which the book reproduces, including one showing the Friedland Schloss, in Bohemia—the original of his unattainable "Castle."

Fanny Kemble, by J. C. Furnas (Dial; $19.95). The subject of this able and engaging volume belongs to the history of the theatre: she was born (in 1809) into the Kemble-Siddons dynasty and became an instant star at her début, as Juliet, at Covent Garden in 1829. She also belongs to the history of history: two of her books—the "Journal of Frances Anne Butler," which appeared in 1835, and recorded her impressions as a much-fêted player touring this country, and her "Journal of a Residence on a Georgian Plantation," which appeared in England in 1863 and described her stay on her husband's family property during 1839—may have helped restrain the British impulse to aid the Confederacy. And she belongs to the history of feminism as well: she quit the stage in 1834 to marry a rich Philadelphian, Pierce Butler, but she found little in her marriage except misery, and in 1849, after years of domestic discord, she was divorced. She then created a second eminent career as a reader of Shakespeare's plays—a lecture-hall performance in which she took all the parts with (to judge from reviews in this country and Great Britain) complete persuasiveness.

In Defence of the Imagination, by Helen Gardner (Harvard; $15). "Defence" has been a regular critical word ever since Sir Philip Sidney's "Defence of Poesie," but the truth is that in this volume, which comprises the Charles Eliot Norton Lectures for 1979-80, Dame Helen is on the offensive, attacking, with the greatest gusto, the latest fads of the new New Criticism (such as "deconstruction"), along with allied efforts in the theatre to pulverize and reconstitute Shakespeare. Learned, lucid, fearless, and funny, the Oxford emeritus professor is at war with pretentiousness and presumption. Along the way, she demonstrates her own scholarly and critical skills—not least her fine, fast prose. The last piece is autobiographical, recalling teachers, friends, and students.

Emulation and Invention, by Brooke Hindle (New York University Press; $22.50). Mr. Hindle, a historian at the Smithsonian Institution, has written a surprising and delightful book on the invention of the steamboat and the telegraph. These were, in the final analysis, American inventions, growing out of a deep technological streak in the



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American character that existed even before the Revolution. What is surprising is that both Robert Fulton and Samuel Finley Breese Morse began their careers as artists; in fact, Morse was one of the finest portrait painters of his generation. Mr. Hindle sees invention and art as being related, since they use the same abilities—spatial visualization and the like. He makes a good case, and his book is a pleasure to read.

THE LITERARY LIFE AND OTHER CURIOSITIES, by Robert Hendrickson (Viking; $25). A collection of a staggering number of facts about language and the art of writing, about books and authors and authorship, and about all sorts of collateral matters. Under such general headings as "Poets and Poetasters" and "Critics, Censors, Bowdlerizers, and Book Burners," Mr. Hendrickson makes anecdotal lists of best-paid and worst-paid authors, of happily married authors and unhappily married authors, of alcoholic authors and gluttonous authors, of authors who did time in prison, of authors whose works were burned (including one who was burned along with his works). There are entries on distinguished infinitive splitters, on suicides caused by books, on noses prominent in literary history, on some of the not very charitable things that writers have had to say about critics. A wonderful divertissement, illustrated with spot drawings and engravings, but, unfortunately, without an index.

FDR: A CENTENARY REMEMBRANCE, by Joseph Alsop (Viking; $25). First-rate pictures (assembled by Roland Gelatt), accompanied by a text of pith, acumen, and style. Mr. Alsop, a well-known journalist and a remote family connection of the President, explains the background of a man who transcended the limitations of his class while retaining some of its strengths. The work draws on Mr. Alsop's acquaintance with many historic figures, but the judgments—the appreciation of varied characters—are clearly his own. A further virtue is that he manages to convey feelings and styles of several past eras, so that we can see what Roosevelt inherited and what he innovated.

WHAT'S WHAT: A VISUAL GLOSSARY OF THE PHYSICAL WORLD, by David Fisher and Reginald Bragonier, Jr. (Hammond; $30). The Messrs. Fisher and Bragonier and a

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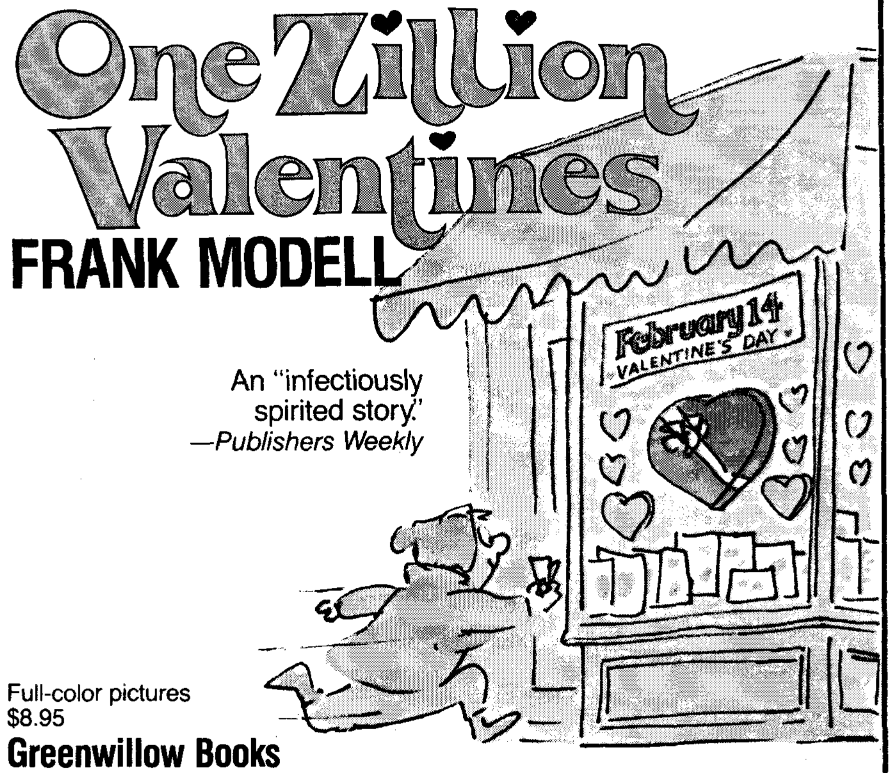

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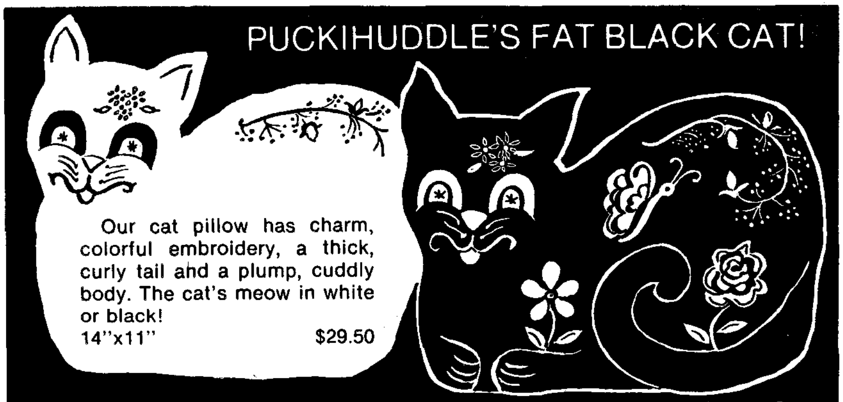

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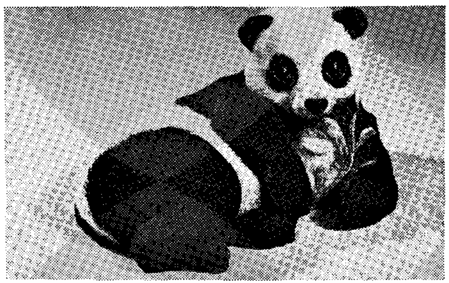

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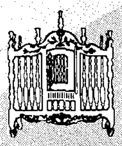

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staff of assistants have accomplished here, in stunning magnitude, what the poet Henry Reed did for the Army rifle in his poem "Naming of Parts." They have provided us with the proper names of the parts of practically every object on earth. The technique is literally graphic: the object (a Ferris wheel, a cowboy boot, a uniformed policeman, the frame of a house, a mountain, a refrigerator, a water ski, a mousetrap, a full denture, a cartoon, a still camera, a sailboat, a Swiss Army knife) is presented in a photograph or a drawing, and its parts are indicated by arrows and identified by name. Some of these names are, of course, familiar enough (a grand piano includes a "keyboard" and a "front lid" and a "back lid"), but most are not (the three pedals on a piano are named, from left to right, "una corda," "sostenuto," "damper"). A fireman wears, as we know, a "helmet," but we probably didn't know that his working uniform is called his "turnouts." The arrangement is by category, and there are twelve of these: The Earth; Living Things; Shelters and Structures; Transportation; Communications; Personal Items; The Home; Sports and Recreation; Arts and Crafts; Machinery, Tools, and Weapons; Uniforms, Costumes, and Ceremonial Attire; and Signs and Symbols. This is a book not to read but to use, and it would seem to be essential to the library of every writer concerned with accuracy of detail.

•

Debate on an amendment to the military appropriations bill offered by Senator Patrick Leahy, Democrat of Vermont, Dec. 3:

Senator Leahy: I do appreciate the kind things said by my colleagues on the other side of this issue. I am reminded a little of the line from "Julius Caesar," when, as you will recall, after Caesar's assassination, Mark Antony said, "I come here not to praise Caesar but to bury him."—*The Times.*

Or words to that effect.

•

MOST FASCINATING NEWS STORY OF THE WEEK

[*The following item, reprinted in its entirety, is from the Manchester* (*N.H.*) *Union Leader*]

GRANITE CITY, Ill. (UPI)—In the early 1970s, a mysterious foe of pollution known only as "The Fox" once showed his contempt for industrial pollution by pouring sludge on a steel executive's office carpet.

Officials say "The Fox" may have struck again.

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*Buick projection of 1982 EPA V-6 Diesel estimates. See your dealer for actual EPA estimates.

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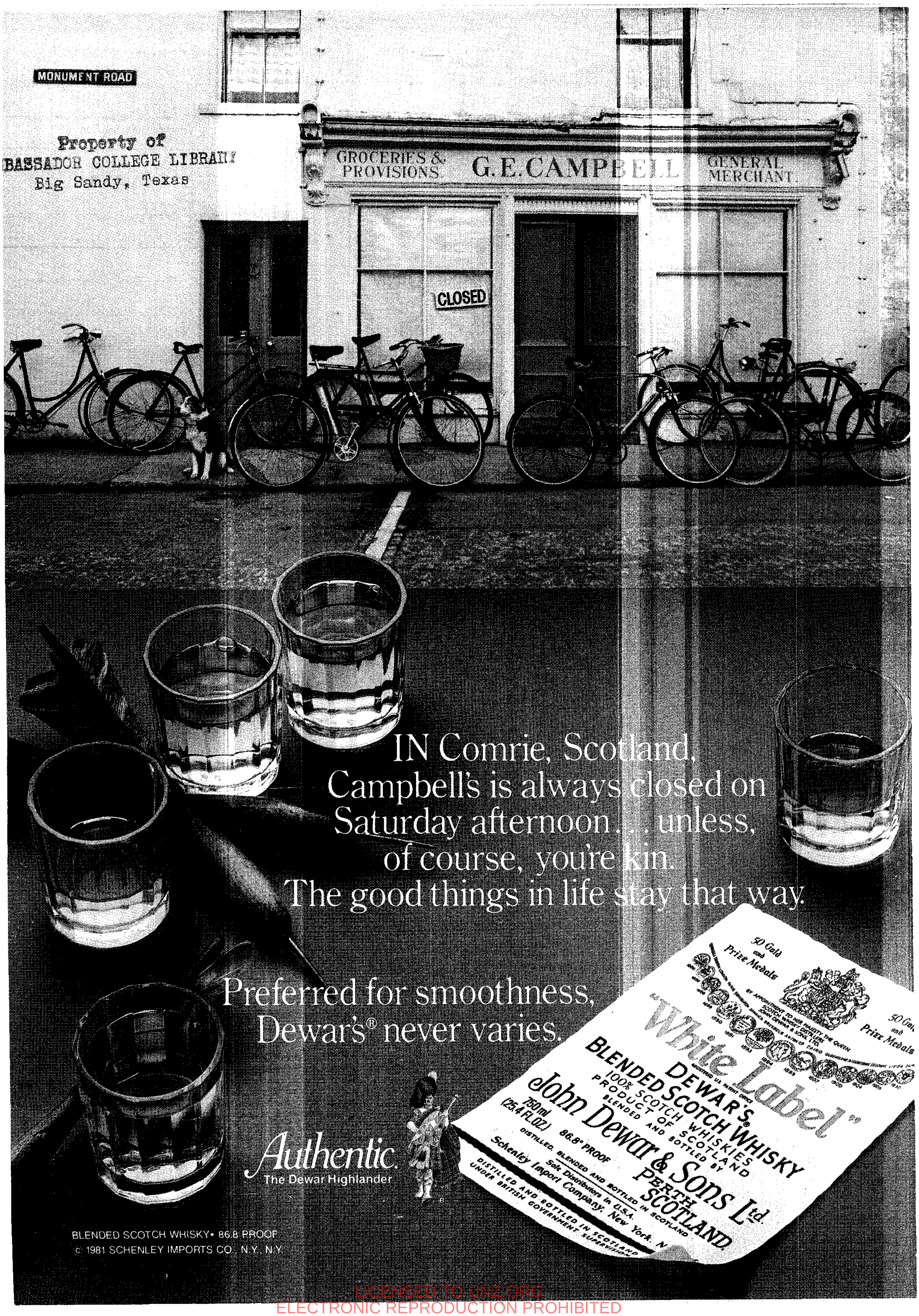
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